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The OIL WEEKLY

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THE WEEK'S NEWS INTERPRETED

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JUL 16 1940

ASK THE MAN AT THE PUMP

HE'LL TELL YOU WHY THEY CALL 'STARCOR' AND 'INCOR' THE OIL MAN'S CEMENTS

M-2097

FIELD: Bruni

TYPE OF JOB: Squeeze; well plugged back from approx. 10,000 ft. to 4,296 ft.; 6 perforations at 4,200 to 4,296 ft.

TEMPERATURE: Approx. 150° F.

CEMENT USED: 'Starcor' - 250 sacks

SLURRY WEIGHT: 14½ lb. per gal.

PUMPING-DOWN TIME: 27 min.

MAX. PUMP. PRESSURE: 120 bbl. water sent ahead of cement. Pressure rose to 1100 lb. when cement came to rest.

REMARKS: No cement retainer used; job was done simply by closing rams. Typical of many successful squeeze and workover jobs, where 'Starcor' has helped convert loss into profit

M-1891

FIELD: Hull Silk Pool, south of Holliday, Tex.

TYPE OF JOB: Casing; 4,292 ft. of 5½" OD pipe in 9" hole

TEMPERATURE: Moderate; no reading

CEMENT USED: 'Incor' - 250 sacks

SLURRY WEIGHT: 16 lb. per gal.

PUMPING-DOWN TIME: 11 min.

MAX. PUMP. PRESSURE: 700 lb. to land plug on float collar

MIXING TIME: 14 min.; 32 ft. cement was left in pipe

REMARKS: 'Incor' pumped easily in a heavy slurry, producing a strong, dense, impervious shut-off. Early drill-out... well on production quicker

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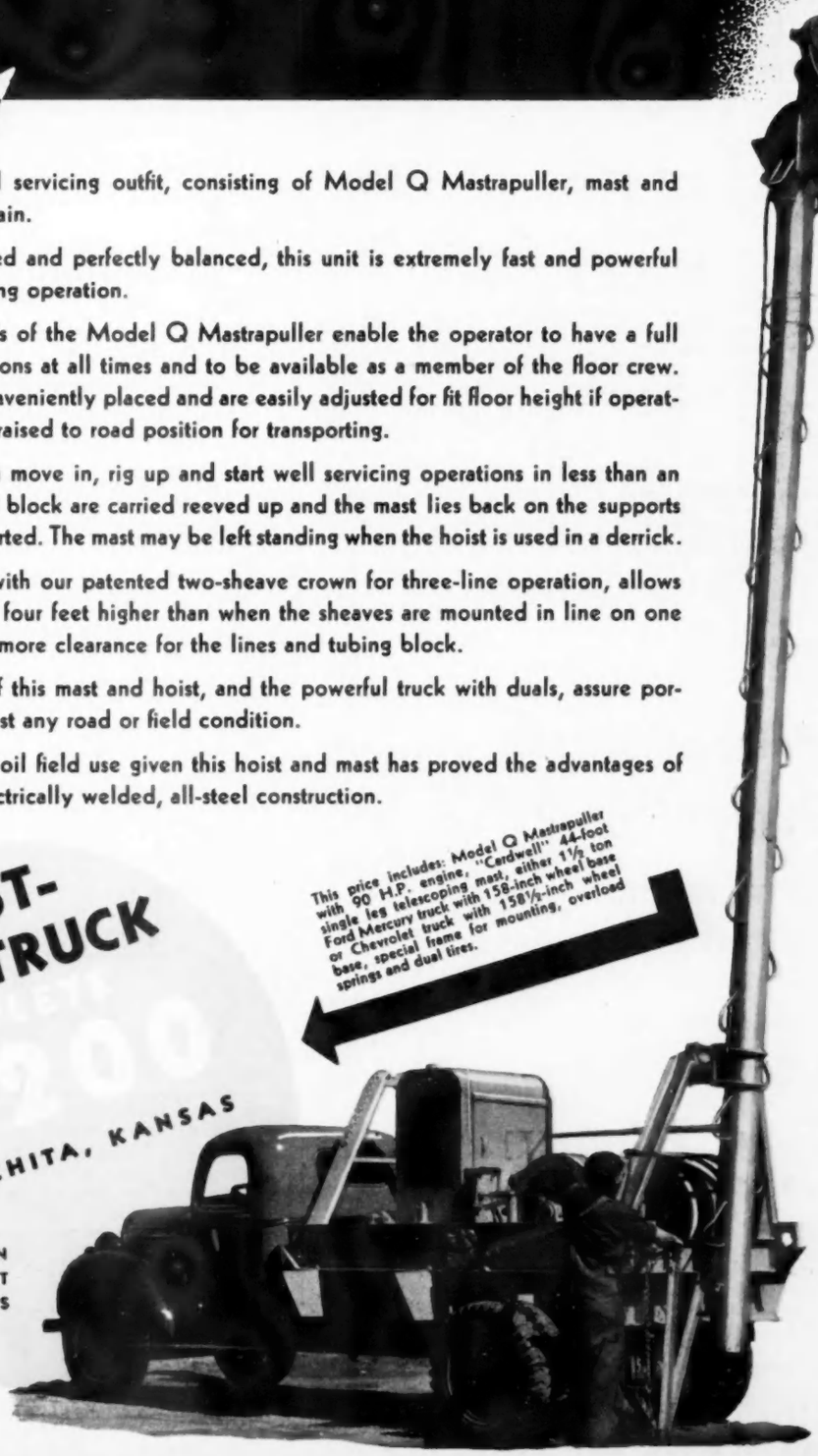

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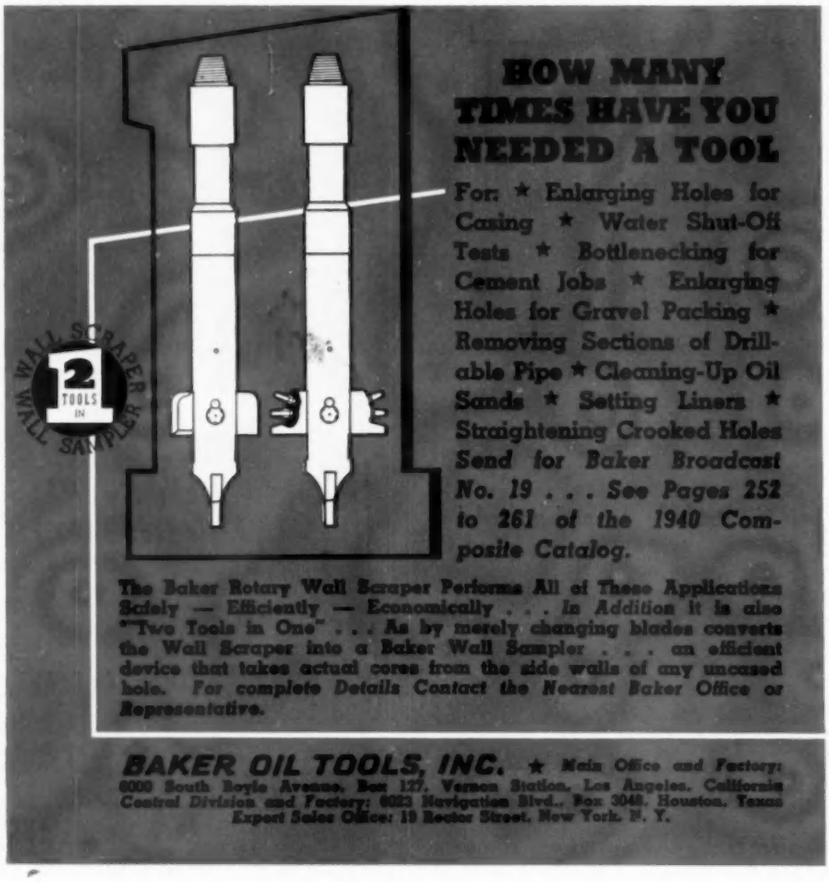

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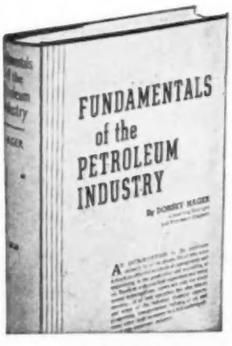

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Looking Ahead

WITH THE EDITOR

DIMINISHING REVENUES from producing wells has become one of the acute economic problems of the industry. With both per-well allowables and crude prices declining in recent years, income from production has decreased appreciably. Many individuals and organizations have warned of the possibility of this trend eventually leading to a disastrous financial condition in which costs would exceed income. However, there has been no attempt to measure the current seriousness of the situation; that is the relationship between expenditures and revenues.

One of the features of THE OIL WEEKLY's Production Progress Number, to be published July 29, 1940, is to be presentation of an attempt to determine the prospects for profit in the industry in the eight states that prorate production for the years 1935 to 1939, inclusive, on the basis of conditions existing in each of the 12 months. Naturally, such a broad study of averages will not provide precise and entirely dependable results, but the study is to be offered as an "estimated" measure of the diminishing returns problem. No doubt many may object to the conclusions and portions of the procedure adopted in this study, nevertheless it is a challenge to the industry to procure a better understanding of its capacity to earn and also for the necessity of finding a solution to the problem that will abate the trend.

Since an acute condition of diminishing returns per dollar invested is shown by the study, it is in order to suggest possible remedies. An accompanying article in the same issue is to discuss the various means that have been suggested as logical solutions. These suggestions should be studied by all producing operators, and since action is the only thing that ever accomplished a job it behooves each oil man to place his efforts behind a concerted planned economy program that will avert the disastrous financial condition they will face if the diminishing returns trend is permitted to continue.

Numerous other important articles are to round out the editorial program in this special Production Progress Issue. Among these will be discussions on advancements in pumping and gas-lift work, theories of lifting oil from 10,000 feet, recycling work, importance of conserving natural reservoir energies, progress in squeeze cementing remedial work, and new developments in water flooding.

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THE OIL WEEKLY

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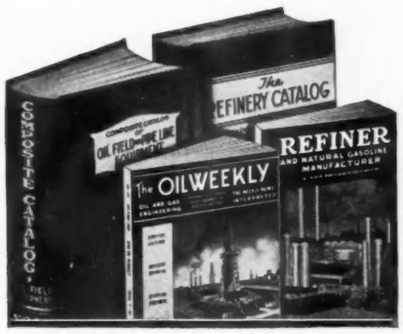

SPECIALIZED OIL JOURNALS
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The Oil Man's Calendar

SEPT. 9–13	American Chemical Society, Detroit.
18–20	National Petroleum Association, Atlantic City, N. J.
OCT. 4	Western Petroleum Refineries Association, Regional Meeting, Wichita.
7–10	American Gas Association, Atlantic City, N. J.
7–11	National Safety Congress and Exposition, Chicago.
16–18	Independent Petroleum Association of America, Dallas.
17–18	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Los Angeles.
25	Western Petroleum Refiners Association, Regional Meeting, Shreveport.
31–NOV. 2	Texas Mid-Continent Oil & Gas Association, Ft. Worth.
NOV. 1	California Natural Gasoline Association, Los Angeles.
11–15	American Petroleum Institute, Chicago.
1941 APR. 2–4	American Association of Petroleum Geologists, Houston.
24–25	National Petroleum Association, Semi-Annual Meeting, Cleveland.

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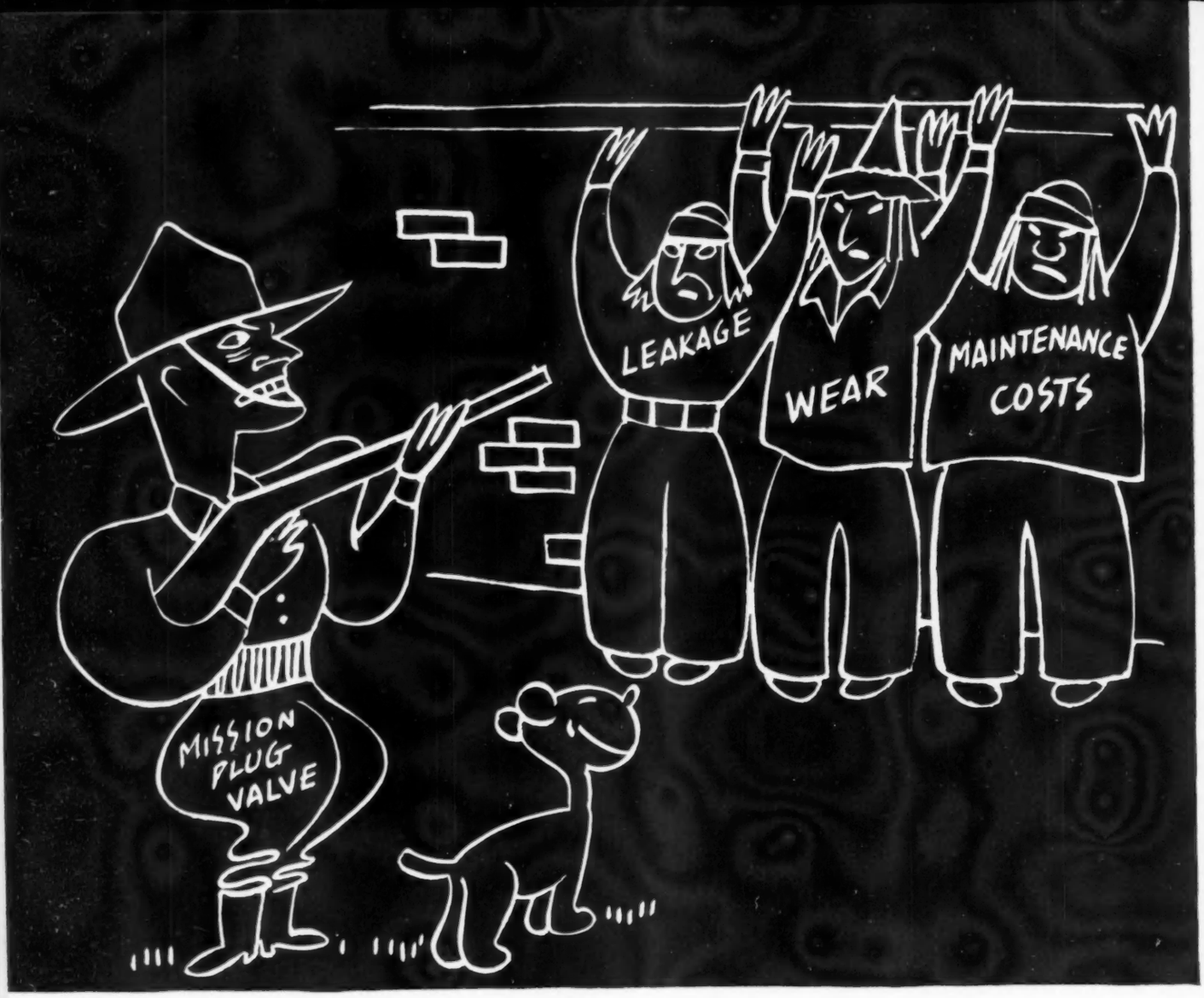

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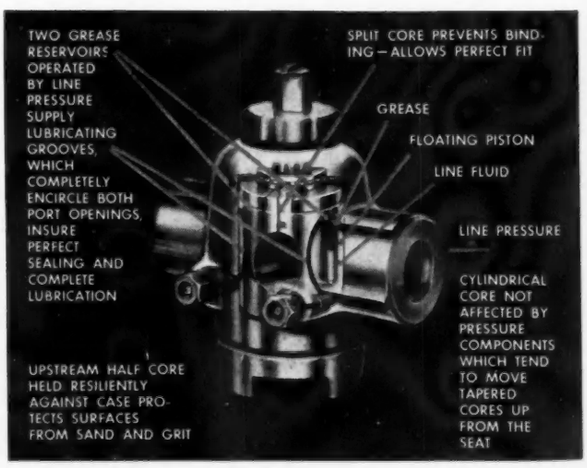
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THE OIL WEEKLY

JULY 15, 1940

VOLUME 98 NUMBER 6

The Week's Panorama

LATEST statistics of the industry, covering the week ended July 6, reflected continued moderate operations at wells and refineries and betterment of the inventory situation.

• • • Crude oil production of 3,602,400 barrels daily, down 37,150 barrels from the previous week's rate, was within 26,000 barrels of the indicated market demand for domestic crude.

• • • Crude runs to stills, at an all-time high of 3,690,000 barrels in mid-June, had been reduced in the week of July 6 to 3,575,000 barrels daily. At that rate, they were only 3.5 percent in excess of the daily average for June and July of last year.

• • • Gasoline production of 11,469,000 barrels in the July 6 week was 203,000 barrels smaller than that in the preceding 7 days.

• • • With benefit of the smaller output at refineries and continued brisk demand, the industry was able to take another large quantity of 1,867,000 barrels out of excessive gasoline storage.

• • • Following that withdrawal, gasoline stocks in the United States totaled 93,275,000 barrels. That amount was 13,460,000 barrels, or 16.8 percent, more than the 79,815,000 barrels on hand at the corresponding time last year. A few weeks ago the gasoline stocks were pursuing a curve approximately 20 percent above that of 1939.

• • • The industry continues fairly successful, meanwhile, in building up light fuel oil stocks into a better relationship to the greatly expanded demand for that product. The inventory of light fuel oil was increased 1,140,000 barrels in the week of July 6 and then was 6.7 percent larger than a year previously. However, economists have counseled an expansion of those stocks by next fall to a level 20 or 25 percent higher than the actual level of last fall.

• • • The industry added 857,000 barrels of heavy fuel oils to storage in the week ended July 6, whereas only minor fluctuations in those stocks have occurred in other recent weeks, with output geared closely to consumption.

• • • The heavy fuel oils are used principally by railroads, ships, and factories. And inasmuch as there has been a picking up, rather than a falling off, of industrial activity and carloadings, the accumulation of heavy fuel oil in storage may have reflected a stepping up of output of that product at the refineries, in anticipation of increased demand in connection with the national defense program.

• • • Business barometers continue to reflect advances of industrial and commercial activity.

• • • The Federal Reserve Board index of industrial production, after having touched a low of 102 for the year in April, rose to 106 in May and was around 115 in June, the board has indicated. The index was at an all-time high of 128 in December, but then declined to 119 in January, 109 in February, 103 in March, and 102 in April.

• • • It now is being predicted that United States automobile manufacturers will sell around 4,200,000 cars and trucks in 1940, a sales volume that would be among the best in the history of the industry. Current sales are brisk, and it is believed that more units may be sold in the latter half of this year than in the corresponding period of last year, in view of the prospects for high levels of industrial activity and employment.

• • • Makers of steel storage tanks, compressor pumps, and other equipment have been given promise of a new type of business, which may assume important proportions—the supplying of equipment for converting natural gas into the liquid state and for storing the liquid.

East Ohio Gas Company, subsidiary of Standard Oil Company of New Jersey, will spend $1,000,000 for such a plant, at Cleveland, in which gas will be liquefied in periods of low consumption and regassified on winter days of peak demand, by the use of steam.

The gas will be compressed in the new plant to about 600 pounds pressure, cooled by a refrigeration system to about 250 degrees below zero, Fahrenheit, and stored in three spherical nickel steel tanks, each 57 feet in diameter, insulated with 24-inch thicknesses of cork.

Good Results in Prospect for Latter Half of Year

By L. J. LOGAN, Associate Editor

THE oil industry has had a comparatively good half-year in the first 6 months of 1940, as record volumes of business and fairly satisfactory prices have made earnings favorable. The large business volumes have reflected record-breaking demand for crude oil and refined products, despite sharply curtailed shipments abroad. And generally good prices have reflected moderate inventories, although the gasoline situation has been an important exception, low prices having prevailed because of burdensome stocks.

For the latter half of 1940, similarly, relatively good results are promised, despite a drab outlook for export business. The national defense program has potentialities for offsetting losses of foreign markets.

Business Advance Expected

From among business men, economists, and government officials there have come within the past few weeks numerous expressions of confidence in the general business outlook. The plans for strengthening the nation's defense are recognized generally as constituting the foundation for an eventual great upsurge of industrial and commercial activity, despite the fact that higher taxes will be entailed. And the influence of that program already is being felt to a considerable extent as the nation's industries proceed with plans and work toward the objectives that have been outlined. The steel mills, airplane factories, machinery manufacturing plants, and other war-related industries have further stepped up operations since the formulation of the defense program, although they already were exceptionally busy on export orders. And activity has increased in various other industries that will be called upon for important cooperation in the arming of the nation. Already, therefore, some employment has been stimulated by the preparedness undertaking, and consumer purchasing power has been augmented a little, while willingness to buy has been materially enhanced by the prospect of increasing demand for workers.

Changes From Year Ago in Stocks of Crude and Refined Oils in the United States

Figures indicate barrels, and sources are Bureau of Mines for crude stocks and American Petroleum Institute for other data.

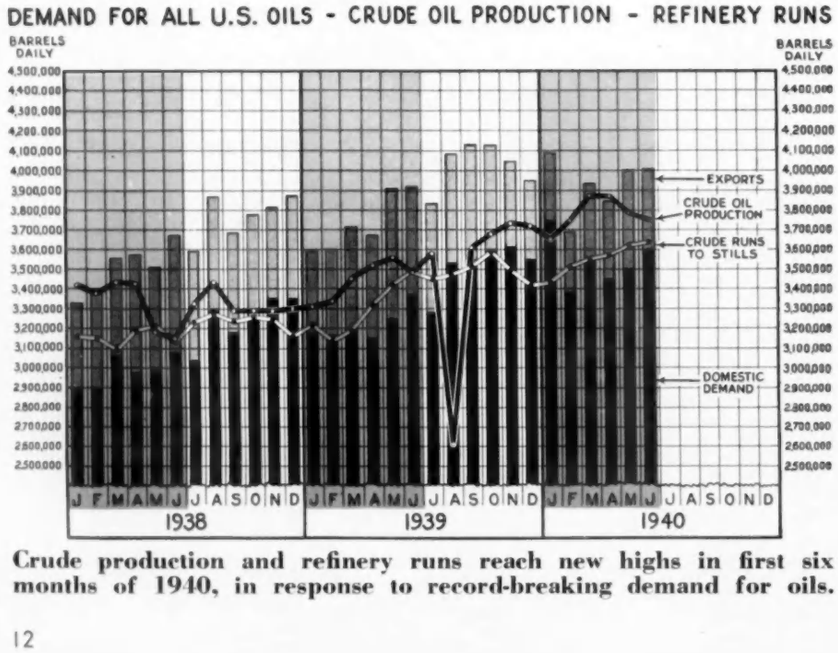
Stocks of:	July 1, 1939	July 29, 1940	Percent Change
Crude Oil	271,567,000	262,059,000	— 3.5
Gasoline	80,418,000	95,142,000	+18.3
Gas Oil and Distillate	31,741,000	33,590,000	+ 5.8
Residual Fuel Oil	112,566,000	104,486,000	— 7.2

In recent weeks, consequently, business conditions have been encouraging. Sales of automobiles and trucks increased sharply around the middle of June, whereas decreases would have been normal. Retail trade has been impressively brisk throughout most of the country and particularly so in the industrial areas that are beginning to supply materials for the defense. The barometers of business have reflected these developments by substantial advances in recent weeks.

Moreover, there is growing perception that the national defense program involves possibilities of a cumulative increase, or snowballing, of business activity, as well as a maintenance of brisk business for several years.

The thought has been voiced that an early termination of the European war might cause a letdown of United States business activity before the effects of the defense program could be felt. But within the past few weeks the importance of that possibility has appeared to diminish, as business has gained momentum that would help to carry it through any temporary difficulties.

Against the extraordinary background of impending shipbuilding, mass production of planes, making of munitions, building up of the army, expansion of the navy, and other defense activity, the outlook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DOMESTIC DEMAND
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1938
1939
1940

Crude production and refinery runs reach new highs in first six months of 1940, in response to record-breaking demand for oils.

for the oil industry cannot appear very dark at the worst.

On the contrary, in those circumstances, the industry's prospects seem definitely favorable. For good business conditions in general assure ready consumption of petroleum products, and brisk demand for oil goes a long way toward providing stability of the industry and satisfactory operating results.

Earnings Favorable

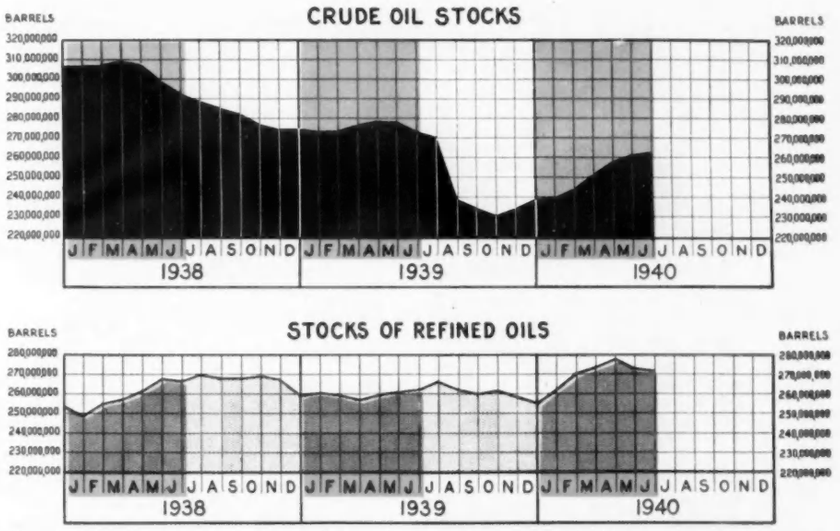
The outlook for oil company earnings in the latter half of 1940 consequently is fairly promising, despite the fact that results have become less favorable in recent months, following an exceptionally profitable first quarter.

Volumes of business probably will be stimulated not only by the defense program but also by record-breaking tourist travel in the United States this summer. Ordinary vacation travel will be augmented by special traffic to the two world's fairs and by trips within the United States for tourists who have been barred from Europe by the war.

Prices of both crude and refined oils have weakened since the beginning of this year, and the reduced margins of profit will hold down earnings in the latter half. However, it is conceivable that the industry's markets may show improvement if and when an acceleration of domestic oil consumption occurs.

The first three months of 1940 represented one of the most profitable initial quarters in the history of the industry, aggregate earnings having almost equaled those of the corresponding periods of 1937 or 1929. Some companies did experience this year the best first quarter in their history. The favorable results reflected record demand for petroleum products, in the face of sharply curtailed exports, and relatively good prices, despite declines as the quarter progressed.

Some concerns earned about the same profits in the second quarter of this year as in the first, but for the industry as a whole, operations probably were considerably less profitable. Market difficulties that developed in the latter part of the first quarter were extended and accentuated in the second quarter, and prices of both crude and refined oils further lost ground.

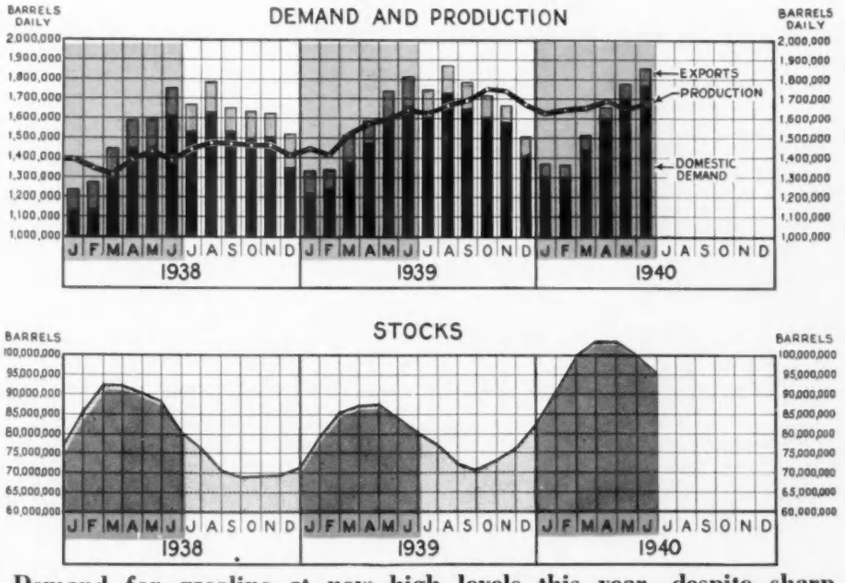


Excessive optimism regarding demand caused building up of stocks of both crude and refined oils in first six months of this year.

The reductions in crude prices have been confined, however, to the Appalachian states and California, Pennsylvania-grade crude having been cut 25 cents a barrel on May 22 and 25 cents more on June 18, while California crudes were cut an average of about 7 cents a barrel February 1. Producers in those eastern and western areas consequently have been handicapped in earning power. But in other districts, solely producing companies and integrated companies producing substantial proportions of their crude requirements have benefited this year from increased production, while previously established crude prices have been maintained.

Integrated companies generally did well in the first quarter, aided particularly by brisk fuel-oil business. But their results subsequently have been less favorable because of weakening of product prices, with low gasoline quotations in the spring and summer seasons of heavy consumption an important disadvantage. Better-than-average results for integrated companies have been shown, however, by the several concerns that have had access to Illinois crude for their Middle Western markets, as those companies have been able to obtain their raw material for 20 to 25 cents a barrel less than by paying transportation charges

GASOLINE SITUATION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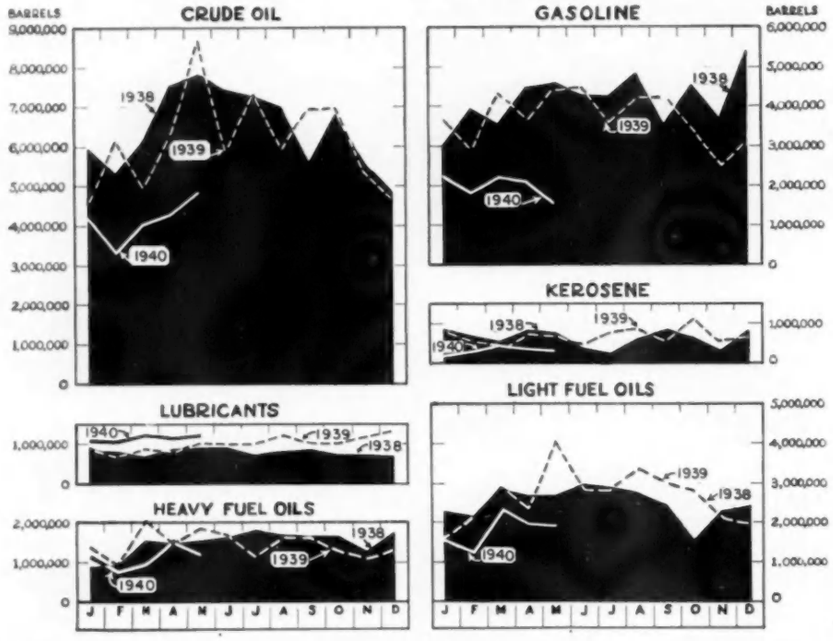
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1938
1939
1940

Demand for gasoline at new high levels this year, despite sharp drop in exports, but too much produced and stocks are excessive.

U. S. Exports of Crude Petroleum and Refined Products



Crude petroleum and all major refined products except lubricants were exported in first half of 1940 in sharply reduced quantities.

on crude brought in from Mid-Continent.

No material changes in the operating conditions of these differently situated groups of companies are indicated for the immediate future.

Demand at New High

While exports of crude and refined oils have been sharply curtailed in 1940 because of the war, domestic demand has exceeded the most optimistic expectations, and the aggregate demand consequently has been greater than generally anticipated around the beginning of the year. In the first four months of this year, total demand was approximately 6 percent larger than the requirements in the corresponding months of 1939, on a daily average basis, and 7 percent greater actually because of the extra day for leap-year.

Domestic demand in the first 4 months was up 10.5 percent on a daily average basis and 11.4 percent actually. Even the more optimistic forecasters had figured only around a 5 or 6 percent gain over 1939.

It was assumed, moreover, that the 5 or 6 percent increase would be shaded a little by the failure of exports to show a proportional gain, and so a gain of only 5 percent or less in total demand was anticipated. Actually, the remarkable domestic demand more than compensated for the fact that exports fell even below the pessimistic expectations.

Total exports were 23 percent, or 13,000,000 barrels, smaller in the first 4 months of 1940 than in the corresponding months of 1939, with crude oil accounting for more than 4,500,000 barrels of the decrease, gasoline 6,000,000 barrels, kerosene 1,000,000 barrels, light fuel oils 2,000,000 barrels, and heavy fuel oils 1,500,000 barrels, while lubricants partially offset those losses with a gain of 1,335,000 barrels. Expressed in terms of percentage, the foreign shipments were down 23 percent for crude oil, 41 percent for gasoline, 40 percent for kerosene, 22 percent for light fuel oils, and 26 percent for heavy fuel oils, while there were gains of 42 percent for lubricants and 12 percent for wax.

Despite those large declines in exports, total demand for gasoline was up 3.1 percent for the first four months of 1940, while there were gains of 10.7 percent for kerosene, 16.6 percent for light fuel oils, 7 percent for heavy fuel oils, 18.8 percent for lubricants, 17 percent for wax, 6.7 percent for coke, 1.5 percent for asphalt, and 40.2 percent for miscellaneous products.

Those substantial gains over 1939 in total demand were possible because of increases in domestic demand amounting to 7.2 percent for gasoline, 16.6 percent for kerosene, 22.8 percent for light fuel oil, 8.8 percent for heavy fuel oil, 8.2 percent for lubricants, 22 percent for wax and 8 percent for coke.

For coming months, domestic demand is expected to continue to show about the same gains over 1939 as heretofore, but exports are expected to be down more sharply. Consequently, less favorable total demand is indicated, unless domestic consumption exceeds the expectations.

While the export situation hangs as a dark cloud over the industry, the gasoline situation also represents a serious problem. A large surplus of gasoline has caused depression of prices of that leading product to levels among the lowest in the history of the industry. The excess is so great that any material improvement in the gasoline market likely will be achieved only gradually and with difficulty, the inventory being apparently around 15,000,000 barrels larger than necessary. Some effort is being put forth to accelerate withdrawals from storage by the taking of smaller yields of gasoline from crude at the refineries, but success has been limited.

The markets for other products of the industry meanwhile have continued comparatively good, despite some weakening in the past several months, and the prospective general business improvement promises to strengthen those markets and stabilize prices at current or higher levels.

Two Thirds of States Show Gains As United States Crude Production for First Half of Year Is Up 10 Percent to New High

(Figures indicate barrels and are from Bureau of Mines, except for May and June, 1940, which are based on weekly estimates of the American Petroleum Institute.)

STATE	First 6 Months 1939	First 6 Months 1940	Percent Change
Arkansas	9,764,000	12,707,700	+ 30.2
California	111,676,000	111,176,400	— 0.4
Colorado	653,000	601,400	— 7.9
Illinois	33,715,000	77,944,500	+131.2
Indiana	402,000	1,785,900	+344.2
Kansas	30,468,000	30,825,400	+ 1.2
Kentucky	2,752,000	2,523,380	— 8.3
Louisiana	47,895,000	52,267,050	+ 9.1
Michigan	10,625,000	11,265,550	+ 6.0
Mississippi	.....	1,347,650	.....
Montana	2,762,000	3,212,800	+ 16.3
New Mexico	18,747,000	20,150,550	+ 7.5
New York	2,463,000	2,636,935	+ 7.1
Ohio	1,577,000	1,440,985	— 8.7
Oklahoma	85,114,000	78,006,950	— 8.3
Pennsylvania	8,424,000	9,197,650	+ 9.2
Texas	244,610,000	257,891,700	+ 5.4
West Virginia	1,790,000	1,673,150	— 6.5
Wyoming	9,918,000	12,132,950	+ 22.3
Others	36,000	42,000	+ 16.7
Total U. S.	623,391,000	688,830,600	+ 10.5

U. S. Continues to Find Many New Fields

By Z. H. MISCHKA, Staff Writer

WILDCATTING, which in 1938 and 1939 gave the industry a large number of new sources of crude production, continued in the first 6 months of 1940 to provide new fields, open new pay horizons in old fields and furnish major extensions to established fields at a rate that indicates much drilling will take place before all of the country's crude reserves are opened.

Exploration during the first half of this year resulted in about 135 new fields, slightly more than half of the 259 new fields found in all of 1939, or than the 264 new fields of 1938.

Moreover, new pay horizons were established at a rate that indicates last year's 215 will be equalled or surpassed.

Evaluation of new field and new pay horizon discoveries of the past six months, running about the same as those of the past two years, takes on added significance when compared to years 1936 and 1937. New sources of crude production, both new fields and new pay horizons, opened during 1936 totaled 223, or only half the number indicated for this year, while the 1937 total was 360, down 25 percent from the present rate.

Texas, largest of the nation's oil-producing states, in acreage and in production, again contributed the greatest share of discoveries.

South Texas Leads All Districts

South Texas, led by two Wilcox fields and one Carrizo strike, furnished 24 new fields and 28 new pay horizons to lead districts of the state. Discoveries during the six-month period little more than balanced the 100 registered during the past year, but had a more far-reaching effect on future development.

The 52 discoveries included 40 crude producers, 7 distillate and 5 gas wells. Nine were recorded above 3000 feet, 16 between 3000 and 5000 feet, 14 at 5000-6000 feet, 7 at 6000-7000 feet, 2 at 7000-8000 feet, 3 at 8000-9000 feet, and 1 below 9000 feet.

Two important Wilcox discoveries highlighted South Texas activity during the past six months. Shell Oil Company's Sheridan prospect, Colorado County, produced crude from an 8150-foot zone. It is about 150 miles west of the nearest crude producer in the same zone. About 60 miles farther west, Atlantic Refining Company's geophysical prospect in DeWitt County, known as Thomaston, provided distillate production below 7800 feet. Only one well is producing in each pool, but a second is coring for the sand at Sheridan.

About 50 miles west of the Thomaston pool and in the heart of the original Pettus district, Anderson Prichard Oil Company and Mills Bennett Production Company found production in the Upper Carrizo or Lower Mount Selman zone in the West Tuleta field. The 7500-foot distillate producer is the deepest in Bee County and further indicates a Sparta-Wilcox play through the South Texas Gulf Coastal trend. Like the other areas, only one producer thus far has been drilled. Two other Wilcox sand tests are drilling along the trend.

Outstanding development of the year centered around West Ranch, Jackson County, which added several thousands of acres of new production to become one of the largest fields in South Texas. Its added reserve, through development and extensions in three sands, increased its ultimate yield by fully 35,000,000 barrels during the past six months. East White Point development into Nueces Bay, Wade City area work in Jim Wells County, plus scattered work throughout the trend kept South Texas drilling at an almost identical level as in 1939. Completions and active rigs were comparable July 1, 1939, and July 1, 1940. The tendency, however, is toward a decline during the remainder of the summer despite a continuance of wildcatting.

Of particular interest in the development program is the number of farmouts of major company leases to independents on a wildcatting basis. Geophysical work is at a peak, most of it being done by these independents on expiring blocks. For this reason, wildcatting activity is even greater than in 1939.

Drilling is centered around tests from 6500 to 8000 feet in wildcat areas, while the majority of drilling in proven fields is localized to zones ranging from 3000 to 6000 feet.

South Texas Discovery Acreage

Discoveries of 1940 embrace areas totaling approximately 19,500 acres, the figure including the actual geophysical or geological picture and not confined to the sector already proved or developed. Development through new discoveries, expansions of present fields and drilling of semi-proved areas, increased producing acreage in South Texas by 7840 acres. Ultimate yield from this acreage is set at a minimum of 83,000,000 barrels.

Marketing trouble hit South Texas during the year. Until commencement of the European war, the district's major outlet was to foreign markets. This market is now virtually closed, and much buying has been curtailed. A material decline in drilling may be expected.

Condensate production jumped considerably as new plants were constructed. Coronado Corporation is building a recycling unit at La-Rosa, Refugio County, and is drilling a number of supply and input wells. Gulf Plains Corporation's plant at Stratton field in Nueces County was completed several weeks ago and now is being placed

into operation. Coastal Recycling Corporation completed a huge unit at Agua Dulce. Lockhart Oil Company's Agua Dulce Plant recently was placed into operation. W. R. Davis & Company's plant at Alice, Jim Wells County, is now building. Several other units are contemplated along the South Texas trend.

North Texas Has 13 New Fields

North Texas holds a prominent place as contributor of new pools. During the first half of 1940, this district accounted for 12 oil strikes and a gas discovery, while new producing horizons were given 3 established areas. Completion of prolific wells from the Bend horizon at Bonita and Ringgold, Montague County, precipitated a major lease play along a west-east trend across the latter county and also Clay County, with a supplemental lease boom moving across the Fort Worth syncline. Development of the Bonita and Ringgold areas has not expanded sufficiently to determine if each involves a major producing area.

Search for deep producing horizons in the district assumed large proportions during the period. The Ellenburger dolomite, deepest known producing formation, was found productive in the K-M-A field. Three Strawn pools were uncovered in Jack, Clay and Young counties, while the Upper Strawn was added to productive zones at Walnut Bend. Canyon discoveries were made in Baylor, Haskell and Wilbarger counties. Four shallow oil strikes were listed for the Cisco series.

Proving of 4 oil levels by Amerada Petroleum Corporation's Goodpasture 1, northwestern Wilbarger County wildcat, in fulfilling an Ordovician depth contract, makes it the most important discovery for the period. Multiple drilling on single well sites is a certainty. Commercial production was indicated by drill-stem tests at 3963-75 feet and 4407-22 feet, while Ellenburger dolomite at 6306-30 feet averaged 15 barrels oil hourly on swabbing test. The hole was plugged back from 6717 feet for completion in Canyon at 3230-52 feet with a prolific natural flow.

Exploratory work in the district is due to continue on an active basis during the remainder of the year. Routine drilling in established fields and pools is expected to be equal to that recorded the first half of the year.

Texas Coast Favorable

Despite a 5.5 percent decline in drilling, more new fields and new productive sands were found in the Texas Gulf Coast area in the first half of 1940 than in the same period last year. Four gas-distillate fields —North Liverpool, Brazoria County; East Bernard, Wharton County; Ogburn, Harris County, and Blessing, Matagorda County—and 3 oil fields — Mackey, Wharton County, Alta Loma, Galveston County, and North Seabreeze, Chambers County — were found. This compares with 3 new fields for the first half of 1939. New sands numbered 6, against 4 during the 1939 period.

Alta Loma appears to be most important of the new strikes. Of 1939 strikes, Chocolate Bayou, Hillje and Caplen received the most development, with results at the latter consistently encouraging. Discovery of a new 7520-foot sand at South China, Jefferson County, and a new 9820-foot sand at Anchor, Brazoria County, increased the importance of those 1939 strikes.

Other new sands opened this year were at 8314 feet on Esperson dome, Liberty County; at 8285 feet at Fannett, Jefferson County; at 4777 feet at Pickett Ridge, Wharton County, and at 6445 feet at Green's Lake, Galveston County, but none had received sufficient development to estimate their importance.

In routine drilling, North and South Thompson fields, Fort Bend County, led with 63 completions, many of them in the 7800-foot Vicksburg. Withers, Wharton County, and Fairbanks, Harris County, followed with 30 and 25 completions, respectively.

Geophysical exploration continued active, 23 crews being in the field on July 1. Twenty were using reflection seismograph, 1 gravimeter, 1 electric and 1 magnetometer.

Crockett County leads West Texas

West Texas recorded 11 oil strikes and 2 gas discoveries for the period, with Crockett County setting the pace in contributing 4 shallow and 1 deep completion. Development of new pools has not progressed sufficiently to determine if they will be a factor in future drilling. Due to a combination of circumstances, such as closely held acreage, isolation from pipe lines and erratic pay conditions, none will experience any appreciable volume of drilling this year.

Western Crockett County added 3 shallow oil strikes, including the Soma pool, which precipitated a large-scale lease play after the discovery made prolific oil and gas flow at 1075 feet. However, later tests on nearby tracts missed the big pay. The county also added its first production from the Crinoidal lime, basal Pennsylvanian, on the Todd structure, but all close in acreage is held by 2 groups of companies. Permian discoveries in Andrews, Crane, Pecos and Ward counties fall on established production trends and are not likely to receive any appreciable volume of drilling. The Quito structure, Ward County, added a large gasser, with oil spray from the Delaware lime, and offers possibilities of being the forerunner of a new oil pool. Completion of Olson Oil Company and McCandless' Crockett 1 gave Pecos County its second Ordovician pool. No additional tests have been drilled.

Extensions given the Foster-Johnson, North Cowden and Goldsmith fields, Ector County, contributed greatly to the heavy volume of drilling activity given the county. Similar situation prevailed in the Seminole field, Gaines County. The Wasson field, centering upon Gaines and Yoakum counties, accounted for more field activity than any other single area in the district. These fields will probably maintain a normal volume of drilling during the last half of the year. A substantial increase is in store for the Duggan-Slaughter district, northernmost oil area in the district, when a direct trunk line outlet is made available next fall.

Panhandle & West Central

The Texas Panhandle failed to record a single discovery during the 6-month period. Majors are the most active in drilling inside locations on their oil leases, and plan to continue this work without any appreciable change. An upturn in drilling in the dry gas region is anticipated if projected natural gas trunk lines to the Middlewest are built.

West Central Texas registered 5 oil and 2 gas discoveries in shallow zones. All are considered small producing areas and are not likely

to receive any appreciable volume of drilling. In view of the dearth of important discoveries, a slight decline in field activity is anticipated.

East Texas

Development of the Chapel Hill structure, Smith County deep oil and gas-distillate area, will be the high point of interest in East Texas during the remainder of the year. Completion of the first oil well in February provided ample inducement for owners of short-term leases to project drilling programs to protect their equity. Bulk of the desirable leases expire in 1941, with sufficient expirations later this year to force competitive drilling.

Restoration of the East Texas field to a well-potential basis of apportioning allowables in June is to be followed by a noticeable gain in drilling. Other older fields in the district are due to experience very little drilling during the remainder of the year. However, competitive drilling at Talco will enable it to be the most active area outside of the East Texas field and the Chapel Hill area.

Illinois Running Higher

Thirteen oil fields were opened in nine Illinois counties during the first six months of 1940, compared to 12 during the same period of 1939. The successful wildcat ventures represented about 4.5 percent of the 264 tests drilled.

Pure Oil Company's Aldridge strike in Jasper County became the largest of the half-year's discoveries when it flowed 1422 barrels of oil with 1,270,000 cubic feet of gas in 24 hours from McClosky lime at 2850 feet.

Illinois completions ranged from 234 in January to 399 in May to establish a state record. Total number of wells drilled in the state's new fields had reached 6550.

Production in January totaled 11,500,000 barrels, rose to 13,580,000 barrels in March, declined slightly during the next two months, but climbed to an all-time peak of 14,000,000 barrels in June. Total production for the six months was 77,266,000 barrels, as compared to 94,302,000 barrels in all of 1939, and 24,075,000 barrels for all of 1938.

Principal factor in production was the Lake Centralia-Salem field, Marion County, where 2150 wells produce an average of nearly 245,000 barrels a day. The Centralia field, Clinton and Marion counties, rose to prominence with discovery of Devonian production, climbing from 5000 to 95,000 barrels a day by mid-June.

Sixty-four new fields have been discovered since 1937. Wildcatting in the northern part of the state is expected to increase during the remainder of the year, while Jasper, White, Wabash, Hamilton, Perry and other counties in the southern part of the state will be more intensely explored than ever before.

Indiana Slow

Three discoveries in Indiana lacked confirmation tests at mid-year. Owensville pool was opened east of the Griffin field, Gibson County, but an offset was dry. Three miles east, the Simpson pool was opened in the St. Louis lime. A Waltersburg-sand strike in the Hatfield area of Spencer County was offset by dry holes.

A horizon tentatively identified as the Clore, found at 1825-35 feet, was the principal new-sand discovery. In the Griffin field, it produced 200 barrels a day in the discovery well.

Michigan Has 10 Strikes

In Michigan, 9 wildcat oil strikes were recorded along with one gas discovery. Completions during the 6-month period totaled 611, a decline of 8 percent from the first half of 1939. Shallow wells, ranging in depths from 800 to 2000 feet in Allegan, Kent and Van Buren counties accounted for 457 of the completions.

Wildcatting is being carried on more extensively than last year, with a total of 181 completions, against 170 for the same period a year ago.

Mississippi Opens Second Field

The Pickens field, Yazoo County, 28 miles northeast of the Tinsley Dome field in the same county, was the only new field discovered in Mississippi. On July 1 it had four wells producing from the Midway series at 4800-4900 feet. Discovery well was Exchange Oil Company's Wilburn 1, NE NE 31-12n-3e. Producing limits have been defined two miles northwest of the discovery.

Discovery of a new producing horizon on the north side of the Tinsley field also featured developments. It is expected to cause considerable drilling.

With over 6,000,000 acres leased between September 1, 1939, and April 1, 1940, a wide-spread wildcatting campaign will continue.

Alabama and Georgia

Five operations were under way in Alabama on July 1. Considerable acreage has been taken in the northwest and southwest parts of the state, and estimates of tests to be drilled during the next 12 months range from 40 to 50.

Two tests were underway in Clinch County, Georgia, and 10 or 12 others may be drilled during the next year.

South Louisiana Active

Ten new fields were opened in South Louisiana, against 7 during the same period in 1939, but new sands declined from 26 to 17.

Of the 6-month period's new field discoveries, Humble Oil & Refining Company's 8700-foot strike at Bayou Des Glaise, Iberville Parish; The Texas Company's 11,400-foot distillate find at Erath, Vermilion Parish, and its 3100-foot low-gravity field at West Cote Blanch, St. Mary Parish, and Atlantic Refining Company's Neale field, Beauregard Parish, appear the most likely to be developed aggressively.

The Cockfield at 6400 feet in the Eola field, Avoyelles Parish, is the new sand find of greatest importance. It augments an extensive reserve in this field. Sun Oil Company's discovery of 1150-foot production on Fausse Point dome, Iberia Parish, is notable as it occurred while cap-rock possibilities generally were being ignored in the search for deep flank production.

Golden Meadows, LaFourche Parish, led in routine development with 73 completions. Eola, currently the most active field in the district, was next with 42 completions, while Charenton, Ville Platte and Baton Rouge fields followed with 39, 36 and 16, respectively.

North Louisiana Has Olla Field

The Olla field, LaSalle Parish, was North Louisiana's sole new field for the 6-month period. Production is from the Wilcox at 2200-2300 feet, and the field numbered 16 oil and 2 gas wells at mid-year.

Outside of Olla, most active was the old Pine Island field, Caddo Parish, where from 6 to 8 shallow wells were completed weekly during the first half of 1940. This development rate is expected to con-

tinue during the remainder of the year.

Arkansas Has Two

Arkansas recorded two strikes, but both lacked their second producing wells at mid-year to make impossible their proper evaluation. Standard Oil Company of Louisiana opened the Fouke field with an oil well in the Paluxy at 3600 feet, while Atlantic Refining Company opened the McKamie field with a gas-distillate well in the Smackover deep lime at 9220 feet. Two Smackover-lime geophysical prospects were drilling in wildcat territory.

California New Sands Important

Principal contributions to California's crude reserves made during the past six months must be credited to discovery of new deep zones in proven areas and extensions to known fields. New fields were opened in the Pyramid Hills area of Kings County, and between the Athens and Potrero fields in Los Angeles County. The discovery in the former pumped 40 barrels of 16-gravity oil from 950 feet, while the Los Angeles strike made 120 barrels of 32.5-gravity oil daily from 9000 feet.

Opening of the 8-3 zone at West Montebello, Los Angeles Basin, has resulted in extensive deepening operations and a number of new wells. The discovery, completed at 7789 feet with water shut-off at 7580 feet, initialed 1712 barrels of 35.3-gravity oil. The Dominguez field was given a northwest extension by a well flowing 1176 barrels of 32-gravity oil daily from 7480 feet.

Oklahoma Discoveries High

Twenty new fields were opened during the first six months in Oklahoma, compared with 22 during the entire year 1939. The majority were small. Five producing horizons were opened in established fields.

Pure Oil Company's Marshall County strike in the southern part of the state is outstanding, but construction of a $54,000,000 hydroelectric dam on the Red River is complicating development of the reserve. The lake to be created by the dam will inundate much of the structure. Five tests drilling in the pool on a northwest-southeast trend have encountered sufficient gas and oil shows to indicate multizone production possibilities. The discovery was completed for 3922 barrels of 37.5-gravity oil from upper and lower sections of the Tulip Creek above 5100 feet.

Of the 20 new pools, 14 of oil and 6 gas, the Hunton lime furnished 4; the Wilcox, Prue, Senora and Cromwell, 2 each, and the Booch, Bartlesville, Salt sand, Oswego, Cleveland, Tulip Creek, Red Fork and Dutcher, 1 each. In old areas, Viola, Booch, Hunton, Earlsbora and a stray sand contributed new zones.

Deep wildcatting in the Western Oklahoma Basin was disappointing. Magnolia Petroleum Company's Fiekes 1, a Canadian County venture, showed good gas possibilities at 9475 feet and was being deepened.

Kansas Has 12

Ten Kansas counties were tapped for 12 new pools, while 10 new horizons were opened in older pools. Barton County led with 7 new pools, followed by Russell with 3, McPherson, Greenwood, Cowley and Stafford with 2 each, and Johnson, Ellsworth, Jefferson and Ellis with 1 each.

The outstanding discovery at mid-year was the North Bornholdt pool of McPherson County. Seventeen Mississippi chat producers have expanded it to such a position that ultimate contact with the Bornholdt pool proper seems inevitable.

Wildcatting in North and far Western Kansas proved discouraging as dry holes were recorded in Gove, Trego, Rooks, Graham, Cloud and Phillips counties.

Rocky Mountain Extensions

The Rocky Mountain district passed through the 6-month period without a new field, but recorded several scattered extensions and new producing zones that resulted in increased drilling activity.

The Shannon sand at 4530-70 feet was found productive in the Cole Creek field, Central Wyoming, by General Petroleum Corporation. Only 13 miles from refineries at Casper, development of this zone will be pushed. The discovery yielded 500 barrels of 35-gravity light green oil on completion, a second well has been completed by the company, the third is drilling and 5 others have been located.

Two miles north and west of production in the LaBarge field, Wyoming, a 200-barrel well from the Almy sand of Tertiary, at contact with Hilliard shale of Cretaceous age, added an estimated 2500 acres to the field. Five wells have since been completed in the new area.

The Tensleep sand at 4295 feet was added to producing horizons of the West Farris field, Carbon County, South Central Wyoming, by a 54-barrel completion of Sinclair-Wyoming Oil Company.

First oil production was obtained in the old Hiawatha gas field, Moffat County, Northwestern Colorado, by Mountain Fuel Supply Company with a well that yielded 250 barrels from three zones in the Wasatch, with bottom at 2335 feet.

Lance Creek field, which should number 100 completions for the year, received a ¼-mile west extension with a 50-barrel Sundance-sand well at 4000 feet. Lance Creek activity has been slowed by government suit contesting titles to 31 oil placer claims involving 2500 acres, of which more than half are located within the East Sundance pool.

Montana drilling was confined chiefly to its principal fields, Cut Bank and Kevin-Sunburst, in the northern part of the state. The state set an all-time production record in May with 608,873 barrels, and during the same month 792,322 barrels were run by Montana refineries. Consumption is currently running ahead of supply, indicating an increase in drilling activity during the second half of the year.

Of Montana wildcat projects, a test in NE NE SW 18-3n-23e, Broadview Dome, Yellowstone County, bailed 50 barrels of oil while cleaning out at 5129 feet. Another operator has moved in rotary for test on a 12,000-acre unitized block on the Absorkee structure, 18 miles north of the Dry Creek field, Stillwater County.

Forest City Basin

Pawnee Royalty Company sparked the Forest City Basin into the limelight late in 1939, and the lease play has been greatly intensified since the second producer flowed in 330 barrels initially. Seven tests were active in the Nebraska sector, 5 in Richardson County and 2 in Nemaha County.

The Kansas section of the basin had a Mississippi-lime completion in Jefferson County that pumped 35 barrels of 21.6-gravity oil. Tests were drilling at mid-year in Jefferson and Douglas counties, while the Missouri sector had 10 tests active.

Drilling Footage Near Peak As Wells Go Deeper

SO FAR, with the first 6 months elapsed, there have been more well completions in the United States in 1940 than ever before except in 1920 and 1937. And inasmuch as the average completion depth has been among the greatest on record, the amount of footage drilled has run higher in 1940 than in any other year except 1920.

Because of $3-crude, the industry drilled more wells and more footage in the first half of 1920 than in any other similar period. The nearest approach to the number of completions in that half-year occurred in 1937, and this year has been within 3 percent of the 1937 record.

In footage drilled, however, the first half of 1940 ranked second only to the like period of 1920, as the average depth reached has been greater this year than in 1937, with the result that the slightly fewer wells of the 1940 first half involved more hole than the completions of the first 6 months of 1937.

Completions in the first 6 months of 1920 and of recent years have been as indicated in an accompanying table.

First 6 Months of:	Total Wells Completed
1920	18,014
1937	15,421
1938	13,938
1939	12,487
1940	14,913

Figures are not available on footage drilled in 1920, but if the average depth per well had been only 2650 feet, the total amount of footage drilled in the first half of that year would have aggregated approximately 47,700,000 feet, an all-time record. (The records of this publication on footage drilled go back only through 1925, for which year all completions in the United States averaged approximately 2900 feet in depth.)

If the above conservative figure on the average drilling depth for 1920 is accepted for comparative purposes, the figures on footage, corresponding with above figures on completions, are as indicated herewith.

Average Drilling Depth Shows Increase This Year

YEAR	Wells Completed	Footage Drilled	Average Depth per Well
1925	25,406	73,677,400	2900
1926	28,995	81,186,000	2800
1927	22,301	66,903,000	3000
1928	19,964	59,892,000	3000
1929	23,463	67,925,285	2895
1930	19,848	57,557,200	2900
1931	11,716	34,259,110	2924
1932	14,290	43,033,422	3011
1933	12,170	36,904,500	3032
1934	18,949	51,748,906	2731
1935	22,669	64,112,400	2829
1936	26,935	77,071,920	2861
1937	33,112	99,922,908	2974
1938	28,272	87,497,152	3095
1939	27,550	82,711,156	3002
First 6 Months			
1939	12,487	38,200,139	3059
1940	14,913	47,109,044	3159
Change	+19.4%	+23.3%	+3.3%

First 6 Months of:	Total Footage Drilled
1920	47,700,000
1937	45,862,054
1938	44,350,716
1939	38,200,139
1940	47,109,044

The 47,109,044 feet of hole drilled in the first half of 1940 represented about 3 percent more footage than the corresponding total in 1937 and 23.3 percent more than the 38,200,139 feet in the initial half of 1939. That large gain over 1939 reflected the 19.4 percent increase in completions (from 12,487 to 14,913) and the 3.3 percent increase in the average depth per well (from 3059 to 3159 feet).

The two groups of figures above reflect not only fluctuations in completions but also variations in average depths, as indicated herewith.

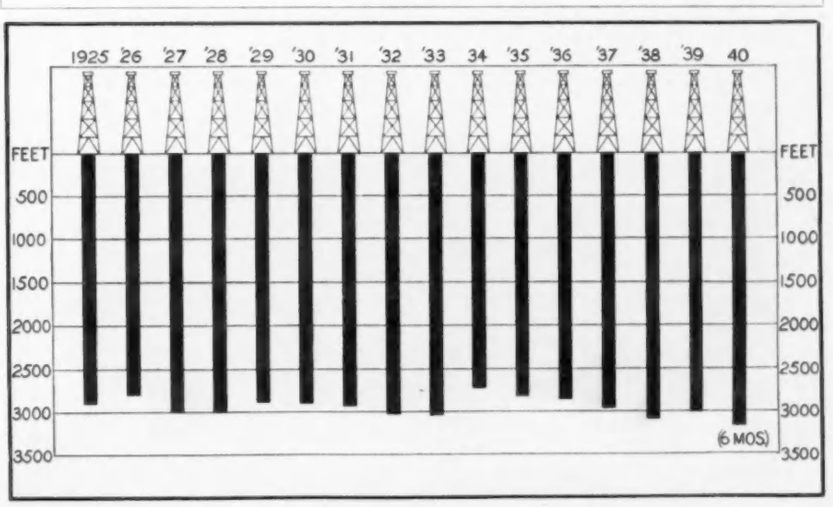
First 6 Months of:	Average Depth
1920	*2650
1937	†2974
1938	3182
1939	3059
1940	3159

*Average probable at least this great, although data not available.

†Average for whole year.

Although the 3159-foot average depth of wells completed in the first half of 1940 was not as great as the 3182-foot average for the first 6 months of 1938, it exceeded the average of 3095 feet for the whole year 1938, the year which

Average Drilling Depth in United States, by Years



has held the record for deep drilling up to now.

The decrease of the yearly average drilling depth from 3095 feet in 1938 to 3002 feet in 1939 resulted in part from heavy drilling in Illinois and the Appalachian states, where depths were shallower than the national average.

The states producing Pennsylvania-grade crude also have been particularly active in drilling this year and have tended to curtail the national average completion depth. But the influence of Illinois in that direction has diminished, as the state's average drilling depth has been materially increased in consequence of the development of the Devonian pay zone. In contrast with the average depth of 1964 feet for all wells drilled in Illinois in 1939, the average for the first half of 1940 was 2595 feet, a 32 percent increase.

Illinois was materially instrumental, therefore, in causing the 5 percent increase of the national average completion depth from 3002 feet for all of 1939 to 3159 feet for the first 6 months of 1940.

Other areas that exerted important influence toward increasing the average drilling depth of the nation, by furnishing deeper wells, included Indiana, Michigan, California, Kansas, South Louisiana, North Texas, West Texas, West Central Texas, and several other districts.

South Louisiana Leader

South Louisiana has maintained this year its rank as the outstanding deep-drilling district of the world. Despite a sharp gain in completions as compared with last year, the average depth per well was further increased 7 percent from 6395 feet in 1939 to 6820 feet in the first half of 1940.

Over 20 fields in South Louisiana produce oil from depths greater than 10,000 feet, among them being the world's deepest, West Dulac in Terrebonne Parish, productive from 13,266 feet.

California Wells Deep

Second to the Louisiana Gulf Coast in deep drilling is California, where the average depth per well increased 8 percent from 5592 feet in 1939 to 6020 feet in the first half of 1940. Numerous California fields are producing from depths greater than 7000 feet, and 10,000-foot production is obtained in each of the three major divisions of the state, the San Joaquin Valley, the Los Angeles Basin, and the Coastal District. The 10,000-foot fields include Coles Levee, Greeley, Paloma, Rio Bravo and Wasco in Kern County, San Joaquin Valley; Kettleman Hills, North Dome, Kings and Fresno counties, San Joaquin Valley; Ventura Avenue, Ventura County, Coastal District; and Long Beach, Los Angeles County, Los Angeles Basin. The Wasco field is productive from below 13,000 feet, furnishing California the world's deepest production with exception of that in Terrebonne Parish, Louisiana. California also still holds the world's record in deep drilling, established by drilling to 15,004 feet at Wasco.

The Texas Gulf Coast ranks next after South Louisiana and California among the major deep drilling areas, despite a 7 percent decrease of the average completion depth from 6335 feet in 1939 to 5859 feet in the first half of 1940. Several fields in the district produce oil from depths greater than 10,000 feet, including Old Ocean and Anchor in Brazoria County, League City in Galveston County, and Wilson Creek in Matagorda County.

South of the Texas Gulf Coast proper, in the Corpus Christi district of South Texas, over 600 wells drilled in the first half of 1940 averaged 5465 feet in depth. That area remained, therefore, among the leaders in deep drilling, despite the fact that the average depth was not as great as that of 5533 feet in 1939.

Although Arkansas has had materially fewer completions than California and the districts along the Gulf Coast, it has continued a predominantly deep drilling area. The 93 wells completed in the first 6 months of 1940 averaged 5976 feet, as compared with an average of 6042 feet for all the new wells of 1939.

Mississippi has assumed this year a prominent place in the nation's drilling picture, having accounted in the first 6 months for 1 more completion than Arkansas, as development of the state's first two oil fields has proceeded, while results in those areas have stimulated wildcatting.

The Mississippi drilling has been comparatively deep, moreover, and a substantial amount of footage has been involved. The 94 wells completed in the first half of 1940 were drilled to depths that totaled 439,502 feet, the average depth having been, therefore, 4681 feet per well. The average in 1939 was 4898 feet, but only 20 wells were completed in that whole year.

More and Deeper Wells Boost Drilling Footage

STATE OR DISTRICT	COMPLETIONS			FOOTAGE DRILLED			AVERAGE DEPTH		
	1939 1st Half	1940 1st Half	Percent Change	1939 1st Half	1940 1st Half	Percent Change	1939 Entire Year	1940 1st Half	Percent Change
Alabama	1	1	0.0	720	645	— 10.4	720	645	...
Arkansas	110	93	— 15.5	673,065	556,047	— 17.4	6,042	5,976	— 1.1
California	508	644	+ 26.8	2,730,450	3,872,004	+ 41.8	5,592	6,020	+ 7.7
Colorado	11	3	— 72.7	33,207	8,318	— 75.0	3,890	2,773	—28.7
Georgia	1	...	— 100.0	3,570	...	...	3,570	...	...
Illinois	1,709	1,791	+ 4.8	3,174,427	4,640,291	+ 46.2	1,964	2,595	+32.1
Indiana	84	197	+ 134.6	148,594	378,752	+ 154.9	1,700	1,923	+13.1
Kansas	621	884	+ 42.4	1,966,985	2,827,817	+ 43.7	3,062	2,199	+ 4.5
Kentucky	293	136	— 53.7	422,749	144,850	— 65.8	1,373	1,065	—22.4
Louisiana	480	804	+ 67.5	2,606,495	4,257,002	+ 63.3	5,632	5,295	— 6.0
North Louisiana	185	288	+ 55.7	734,537	741,604	+ 1.0	3,840	2,573	—33.0
South Louisiana	295	516	+ 75.0	1,871,958	3,515,398	+ 87.8	6,395	6,820	+ 6.6
Michigan	653	613	— 6.1	1,112,835	1,223,695	+ 10.0	1,810	1,998	+10.4
Missouri	...	5	...	...	6,494	...	...	1,299	...
Mississippi	4	94	+2250.0	19,974	439,502	+2100.0	4,898	4,681	— 4.4
Montana	50	78	+ 56.0	113,922	159,329	+ 39.9	2,083	2,043	— 1.9
New Mexico	286	358	+ 25.2	1,092,278	1,144,601	+ 4.8	3,508	3,197	— 8.9
New York	*231	*503	+ 117.7	369,464	638,668	+ 72.8	1,460	1,271	—12.9
Ohio	400	422	+ 5.5	830,580	662,883	— 20.2	1,927	1,571	—18.5
Oklahoma	995	1,062	+ 6.7	3,016,990	2,925,323	— 3.0	2,961	2,758	— 6.9
Pennsylvania†	*1,044	*1,766	+ 69.1	1,789,903	3,249,107	+ 81.6	1,703	1,841	+ 8.1
Tennessee	...	7	...	...	36,756	...	...	5,251	...
Texas	4,734	5,119	+ 8.1	17,261,446	19,038,026	+ 10.3	3,698	3,719	+ 0.6
East Texas Field	275	144	— 47.6	1,099,375	511,774	— 53.4	3,629	3,556	— 2.0
Rest of East Texas	148	127	— 14.2	581,060	566,124	— 2.6	4,138	4,460	+ 7.8
North Texas	801	1,124	+ 40.4	1,720,439	3,007,972	+ 74.9	2,304	2,676	+16.1
South Texas	1,373	1,334	— 2.8	5,287,864	5,201,202	— 1.6	3,891	3,897	+ 0.2
Corpus Christi Area	651	628	— 3.5	3,559,605	3,430,512	— 3.6	5,533	5,465	— 1.2
Laredo Area	516	573	+ 11.1	1,353,675	1,516,573	+ 12.0	2,535	2,648	+ 4.5
San Antonio Area	206	133	— 35.5	374,585	254,117	— 32.2	1,750	1,912	+ 9.3
Texas Gulf Coast	709	672	— 5.2	4,203,075	3,934,487	— 6.4	6,335	5,859	— 7.5
Texas Panhandle	181	296	+ 63.5	547,891	900,216	+ 64.4	3,051	3,039	— 0.4
West Texas	1,033	1,063	+ 2.9	3,519,004	4,274,060	+ 21.5	3,549	4,019	+13.2
West Central Texas	214	359	+ 67.7	302,737	642,191	+ 112.2	1,588	1,789	+12.6
Utah	...	1	...	...	5,643	...	...	5,643	...
West Virginia	227	264	+ 16.3	580,000	676,658	+ 16.7	2,554	2,565	+ 0.4
Wyoming	45	68	+ 51.1	252,485	216,633	— 14.2	3,304	3,187	— 3.5
Total United States	12,487	14,913	+ 19.4	38,200,139	47,109,044	+ 23.3	3,002	3,159	+ 5.2

* Includes water input wells.
† Bradford field data for first 5 months revised in accordance with the Producers Monthly.

Pipe Line Construction Maintains High Level

PIPE LINE construction activity, which in 1939 reached a high peak of several years, continued at the increased pace during the first six months of this year, indicating the year's end may see the 4300-mile construction figure of last year equalled or surpassed.

Exclusive of numerous short lines which comprised a good share of the 4300 miles constructed in 1939, as summarized by THE OIL WEEKLY in its issue of January 29, 1940, completed main line mileage during the first six months of this year totaled 1600. Allowing for short lines not covered in this mid-year survey, which if included would bring the present figure to well above 2000 miles of line built, 1940 promises to be as good as 1939 in pipe line construction.

Lines under construction, totaling 1200 miles at this time, compare favorably with the 1220 miles that were under construction January 1.

Three projects for bringing gas from the Texas Panhandle and the Hugoton district of Kansas to Minnesota and Wisconsin industrial centers loom as the largest projects under consideration, and it is considered likely that one may reach the construction stage yet this year. Two of the proposed lines would terminate in Wisconsin, while the third would serve Northern Minnesota and points along the route. Other projects under consideration total 1700 miles.

A proposed 550-mile line for Argentina and a 50-mile project announced for Mexico comprised foreign projects.

Eastern States

Three gasoline lines, loops to a crude line, and a proposed natural gas line featured pipe line activity in Eastern States.

Southeastern Pipe Line Company's 450-mile gasoline line from Port St. Joe, Florida, to Lookout Mountain, Georgia, continued under construction. Six- and 8-inch pipe is being used.

Contract was let by Socony-Vacuum Oil Company for a refined products carrier from its refinery at Buffalo, New York, to Syracuse and intermediate points. Involving an aggregate of 172 miles of welded line, it will consist of 142 miles of 6-inch pipe from Buffalo to Syracuse, with a 15-mile 4-inch lateral to Canadaigua and a 15-mile 6-inch extension north to Rochester. The latter will also serve as a barge terminal on Lake Ontario. Completion is scheduled for October 1.

Shell Oil Company has started an 85-mile 6-inch gasoline line from its marine terminal at Fall River, Massachusetts, to marketing areas in and west of the Boston area. It will have a capacity of 10,000 barrels daily.

Transit & Storage Company is adding 68 miles of 8-inch loop to its two 6-inch crude lines between Cgynet, Ohio, and Sarnia, Ontario, Canada. The line serves Imperial Oil Company's refinery at Sarnia, and will boost runs there from 25,000 to 30,000 barrels daily.

The Manufacturers' Light & Heat Company is seeking authority from the Pennsylvania Public Utility Commission to operate a gas line across Pennsylvania to bring gas from West Virginia fields to industrial centers in New York.

Foreign Proposals

The Argentina government, through Yacimientos Petroliferos Fiscales, is reported planning a 550-mile 12-inch crude line from the Tupungato and Lunlunta fields, in the interior province of Mendoza, to the Atlantic Coast.

Petroleous Mexicanos has announced plans for a 50-mile electrically welded 12-inch crude line from Poza Rica field, Mexico, to Alamo. It will take the place of an old line from Barra de Tuxpan and Ojite, and that between Ojite and Petrero.

Illinois Active

The Illinois Basin, which was breaking production records at mid-year, led other districts in total mileage of new lines. Nine projects accounted for over 500 miles of new line.

Sohio Corporation, affiliate of Standard Oil Company of Ohio, currently purchasing 115,000 barrels a day from Illinois fields, laid 352 miles of new line. A 12-inch carrier was laid from Stoy, Illinois, to Lima, Ohio, with a 10-inch line from the Salem field to tie in with the 12-inch carrier at Stoy. To service new pools in southeastern Illinois, 20 miles of 3- and 4-inch pipe was laid from the Barnhill and Burnt Prairie pools of Wayne and White Counties to Boyleston; with another 20 miles of 4- and 6-inch line from the Iron and Storms pools of White County to the company's terminal at Mt. Vernon, Indiana.

Illinois Pipe Line Company laid 40 miles of 10-inch line from Martinsville to Mount Rose. Gulf Refining Company laid a 6-inch lateral to move production from the Centralia townsite field to Dublin, Indiana, via its carrier from Mid-Continent points. Shell Oil Company connected the Salem field to the trunk line of Illinois Pipeline Company at Sandoval by means of a 7-mile 6-inch line.

The 6-month period's largest gasoline line completed connected The Texas Company's Indian refinery at Lawrenceville, Illinois, with a terminal on the Ohio River at Mt. Vernon, Indiana. The 68-mile 6-inch line has a capacity of between 6000 and 10,000 barrels a day.

Texas-Empire Pipe Line Company constructed two loops of 10-inch on its Salem-Heyworth

trunk line, a 32-mile section south from the Decatur station and a 10-mile section south from Brownstown.

Outstanding among Illinois planned pipeline projects is a 50-mile 8-inch line from near Centerville in White County to Bridgeport. It would service the Lancaster, Albion and other fields in the south end of the basin and have a 35,000-barrel capacity.

Three For West Texas

Three substantial pipe line projects were authorized during the first half of 1940 in West Texas. The longest completed carrier involved Basin Pipe Line Company's 97-mile 6-inch crude line from Wasson field to a refinery at Big Spring, Texas, while the initial gathering system embraces 16½ miles of 4-inch. The Texas-New Mexico Pipe Line Company authorized the construction of 104 miles of 8 5/8-inch crude line from the Slaughter-Duggan district to Midland, and in all probabilities will enlarge the project to continue to its Crane Station, an additional 50 miles. It is the first direct outlet for the district, which is dependent upon a local refinery and tank truck shipments for a market, and will be completed in the fall. Magnolia Pipe Line Company provided an outlet for the Seminole field, an active drilling center, late March with the completion of 26-mile 8-inch carrier. The latter and Atlantic Pipe Line Company installed gravity gathering systems.

Enlargement of existing trunk line systems that serve West Texas and Southeastern New Mexico affords the only immediate prospects of additional pipe line work of any consequence. However, an increase in the crude allowable of the bi-state district will be necessary to bring about the adding of loops or supplemental lines. New Mexico's pipe line construction during the first half of the year involved 2 short crude lines by The Texas - New Mexico Pipe Line Company and a 24-mile gas line extension by the New Mexico Eastern Gas Company.

Relief for the congested transportation problem of North Texas was given through the installation of a supplemental 8-inch carrier, aggregating 66.4 miles, by Sinclair Refining Company, pipe line division, from K-M-A field to its Hensley station. The company also built a 7.3-mile 6-inch line from the Bonita pool to its multiple system near Nocona. Continental Oil Company placed in operation a 20-mile 4-inch line that delivers natural gasoline to its refinery at Wichita Falls. The construction of loops, or supplemental trunk lines will be authorized by 2 or more of the majors that serve North Texas if the demand for this high gravity crude is materially increased later this year.

Pipe line activity in West Central Texas involved 3 short natural gas lines, and 2 crude line outlets for the Stribling and Stroud pools, Stephens County. The East Texas district was likewise a small contributor to the state's pipe line mileage, although one or more short pipe line extensions are to be installed in the Chapel Hill field, Smith County.

South Texas Gasoline Line

Magnolia Petroleum Company completed a 139-mile gasoline line from barge terminal and storage center near Corpus Christi to San Antonio, largest of several South Texas projects. With two booster stations, it has a capacity of 4500 barrels daily. Four-inch pipe was used for 119 miles, and 6-inch pipe for 20 miles. The company also constructed a 12-mile 6-inch line from Lolita field to West Ranch to tie in with its main system.

Continental Pipe Line Company completed a 55-mile 8-inch line from San Diego to Corpus Christi, and a 25-mile 5-inch line to serve the Driscoll field and an 8-mile 4-inch line to serve the Wade City field.

M. A. R. Pipe Line Company built a 45-mile 6-inch line from Ben Bolt to Corpus Christi, while Humble Pipe Line Company completed a 22-mile 4-inch line from Randado to Colorado.

W. R. Davis & Company and Valley Pipe Line Company completed an 18-mile 4-inch line from Rincon to Valley Pipe Line Company's main line, and from this line to W. R. Davis & Company's terminal at Brownsville. Valley Pipe Line Company also laid a 4½-inch line from Ricaby to Cuevitas and a 5½-inch line from Ricaby to Alta Mesa.

Amsco Pipe Line Company built a 30-mile 6-inch line from La Rosa to Corpus Christi.

Pipe line construction on the Texas Gulf Coast was slow. Mag-

Construction scene on Southeastern Pipe Line Company's gasoline line from Port St. Joe, Fla., to Lookout Mountain, Ga.

nolia Petroleum Company laid 60 miles of 6-inch line from Brookshire to Beaumont, and reconditioned main lines from Corsicana to Conroe. Crown Central Petroleum Company laid new 8-inch from Manvel field to Pasadena. Stanolind Oil & Gas Company laid 15 miles of 6-inch from Alta Loma to Texas City. The largest project so far this year, Dow Chemical Company's 41-mile, 8- and 10-inch line from Bay City to Freeport, is under construction.

Louisiana

In South Louisiana, one gas and one oil line were completed. United Gas Company laid a 35-mile 12-inch gas line from Lirette to New Orleans; The Texas Company built a 23-mile 8-inch crude line from Paradis to Morerro. Continental Oil Company built a 16-mile 8-inch loop to its line from Tepetate to Ville Platte.

Southern Natural Gas Company has undertaken a $3,000,000 expansion program for its Louisiana to Georgia gas system to boost capacity about 30,000,000 cubic feet. The program includes installation of 80 miles of line, part of which will parallel the existing system from the Monroe gas field of Louisiana to Millidgeville, Georgia, and addition of approximately 13,000 horsepower in compression stations in Louisiana, Mississippi, Alabama and Georgia. A new station is being built at Tarrant City, Alabama, and one at De Armanville, Alabama, is being put back into use.

Preliminary plans have been announced for organization of a company to be known as Tennessee Gas & Transmission Corporation for construction of an 800-mile natural gas line from Louisiana fields to serve towns in Central and East Tennessee. Estimated cost of the project would be $18,000,000.

Rocky Mountain District

Construction is to begin immediately on a 62-mile 4-inch crude line from Wyoming's Lance Creek field to Newcastle. It is being built by J. S. Ward and associates, who operate Manville Crude Oil Company and several small refineries in the Newcastle area.

In the Rocky Mountain area, Northern Pipe Line Company has been given authority by the Wyoming Public Service Commission to construct a 100-mile gas line from Casper to the Billy Creek field, Johnson County. It would take gas from the Muskrat and Big Sand Draw fields of Fremont County, brought as far as Casper by Northern Utilities Company, to the line of Montana-Dakota Utilities Company, serving Sheridan and Buffalo.

Inland Empire Refineries, Inc., Spokane, Washington, has taken preliminary steps toward construction of a 320-mile crude line from Cut Bank, Montana, to Spokane. Six-inch pipe would be used for 313 miles, and 4-inch pipe for the remaining 7 miles. Estimated cost of the project, including two pump stations, is $2,500,000.

Gas Lines in Prospect

Three projects are under consideration for taking gas from Southwestern fields to northcentral states, one to the iron ore region of northern Minnesota and two to Milwaukee and other industrial centers of Southern Wisconsin. The Kansas Pipe Line & Gas Company, in conjunction with L. R. Hagy, Harrington & Marsh, Amarillo interests, are carrying on negotiations for financing of a 1050-mile line to Minnesota and South Dakota.

Independent Natural Gas Company, subsidiary of Phillips Petroleum Company, is awaiting approval of the Federal Power Commission and the Wisconsin Public Service Commission for an 877-mile 22-inch natural gas carrier from the Texas Panhandle to Milwaukee and intermediate points.

Western Natural Gas Company has filed application for authority to construct a 770-mile natural gas line from the Hugoton district of Southwestern Kansas to Milwaukee, serving Dubuque, Iowa, and other cities along the route. Estimated cost would be $30,000,000.

Michigan Activity

Gas transmission accounted for the two largest pipe line jobs completed in Michigan to mid-year. Dow Chemical Company constructed 55 miles of 6-inch between Grimes Gasoline Company's Temple (Clare County) plant and Dow Chemical Company's Midland plant. Gas is being used in industrial processing.

West Michigan Consumers Company, Muskegon, built 22 miles of 8-inch gas transmission line between Pent-Hex Corporation's Grand Rapids casing-head gasoline plant and the Ravenna booster station to tie into the company's old 6-inch which terminals at Muskegon.

Bay Pipe Line Company built 20 miles of 4-inch pipe line between Loomis and the company's Buckeye (Gladwin County) pump station to carry oil direct from Wise pool into its affiliated refinery at Bay City.

Sohio Corporation built approximately 15 miles of 3-, 4- and 6-inch, some being replacement, in its Walker (Kent & Tallmadge field) transportation system. No major oil trunk lines were constructed.

Kansas Has 134-Mile Line

Stanolind Pipe Line Company completed a 134-mile crude line from the Bemis-Burnett area of Ellis County to the Washington station, Northeastern Kansas, where it ties into the company's line from Fort Laramie, Wyoming. The line used 127 miles of 10-inch and 7 miles of 8-inch pipe and is rated at from 12,000 to 15,000 barrels daily.

Cities Service Gas Company started work on a 65-mile 12-inch line from the Cunningham field of Pratt and Kingman counties to Wichita, where it will tie into the company's 20-inch trunk from the Texas Panhandle to Kansas City and other Missouri points.

Northern Natural Gas Company has contracted for 75 miles of loops on its line from Kansas to Omaha and Minneapolis. Sixty-six miles of 24-inch pipe and 9 miles of 12-inch pipe will be used. The company has also received bids for a 22-mile 10¾-inch line from Boone to Ames, Iowa.

Extensions to present systems will be necessary to service recently opened pools, but none of them are sufficiently far from old production to require construction of long lines.

A 25-mile natural gas line is being constructed by Kansas Pipe Line & Gas Company from Cambridge to McCook, Nebraska, with laterals to Indianola and Bartley. Development results in the Forest City Basin have been of minor importance, and as yet no pipe lines have been talked for this area.

Oklahoma Is Slow

Stanolind Pipe Line Company entered the Byars pool of McClain County and the Bebee pool of adjoining Pontotoc County with a 13-mile line consisting of 8½ miles of 6-inch and 4½ miles of 4-inch pipe.

Oklahoma Utilities Company has a 16-mile gas line under construction to link the Arlington field, 10 miles south of Stroud, to its system in the Big pond area.

Galvanic Corrosion of Dissimilar Metals in Salt Water Solutions

By H. R. COPSON, Research Laboratory,
The International Nickel Company, Inc.

MANY dissimilar metals are in contact in oil wells. As the wells often contain a brine solution, which readily would permit a flow of current, an investigation of the galvanic effects between these metals is pertinent. For this purpose the general principles involved in galvanic corrosion have been reviewed, and the results of some galvanic tests with oil-well materials have been presented. The conclusions drawn are that in aerated brines: 1, the galvanic effects produced by coupling different grades and tempers of carbon steel with each other are negligible; 2, when carbon steels (drill pipe, casing, and tubing) are in contact with alloy steels (used for casing and tool joints) the potential differences are always in such direction as to protect the alloy steels; 3, in such galvanic couples the corrosion of the anode is controlled by the total area of the metals exposed; and, 4, the lack of oxygen in most oil wells suppresses the galvanic effects.

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The statements and opinions expressed herein are those of the author, and should not be construed as an official action or opinion of the Institute nor of this publication.

THE most common form of corrosion of iron by neutral salt solutions requires the presence of oxygen. In its simplest terms the reaction may be pictured as follows:

$$2Fe+O_2+2H_2O \rightarrow 2Fe(OH)_2 \quad (1)$$

According to the electrochemical theory of corrosion, this reaction takes place in two parts: 1, at anodic regions:

$$2Fe \rightarrow 2Fe^{++}+4\,e \quad (2)$$

2, at cathodic regions[1]

$$4H^+ + 4\,e \xrightarrow{O_2} 4H \longrightarrow 2H_2O \quad (3)$$

$$4\,e + O_2 \xrightarrow{2H_2O} 2\,O^- \longrightarrow 4(OH)^- \quad (4)$$

In neutral salt solutions well supplied with oxygen, the cathodic reaction will tend to follow equation (4); i.e., adsorbed oxygen will react with a water dipole to give hydroxyl ions. In slightly acid solutions the cathodic reaction will tend to follow equation (3); i.e., the electron jump will tend to be to the hydrogen ion rather than to the oxygen. In either case oxygen is required for the completion of the cathodic reaction.

The rate at which the corrosion reaction proceeds will be influenced by a large number of factors—of which the oxygen supply, the temperature, composition, and relative motion of the solution, and the formation of films of corrosion product will be most important. Very often the oxygen supply is the controlling factor.

Galvanic Corrosion

The anodic and cathodic parts of the corrosion reaction may be separated by appreciable distances. Thus, when corrosion takes the form of pitting, the anodic reaction predominates in the pitted area, and the cathodic reaction on the rest of the surface. When two dissimilar metals are coupled in the same solution, the two reactions may be separated even further. The metals usually will develop a difference of potential. This will tend to confine the anodic reaction to the less-noble member of the couple, and the cathodic reaction to the more-noble member. The result will be an increased rate of corrosion of the less-noble member, and in most cases a decreased rate of corrosion of the more-noble member. A well-known example of this is the coupling of zinc and iron in salt water.

Whereas the potential difference will determine which member of the couple will suffer increased corrosion, the actual magnitude of the increase will depend on the current flowing between the two metals. If no current flows, there can be no galvanic corrosion. The flow of current will be influenced by the factors discussed hereinafter.

Area Ratios

The relative area of anode and cathode is one of the most important factors determining the intensity of galvanic corrosion. Increasing the area of the cathode increases the area for the cathodic reaction and, hence, increases the galvanic current. Decreasing the area of the anode confines the anodic reaction to a smaller area, and increases the intensity of the corrosion. Thus in a good conducting solution a steel rivet in a monel sheet will be corroded rapidly. The reverse situation, i.e., a monel rivet in a steel sheet, will produce little galvanic action. To show the magnitude of the effect quantitatively, some data reported by U. R. Evans[2] are reproduced in Table 1.

The fact that the magnitude of the galvanic effect depends to such a large extent on the ratio of the exposed areas of the metals forming the couple makes galvanic-corrosion testing only semi-quantitative. The quantitative results of

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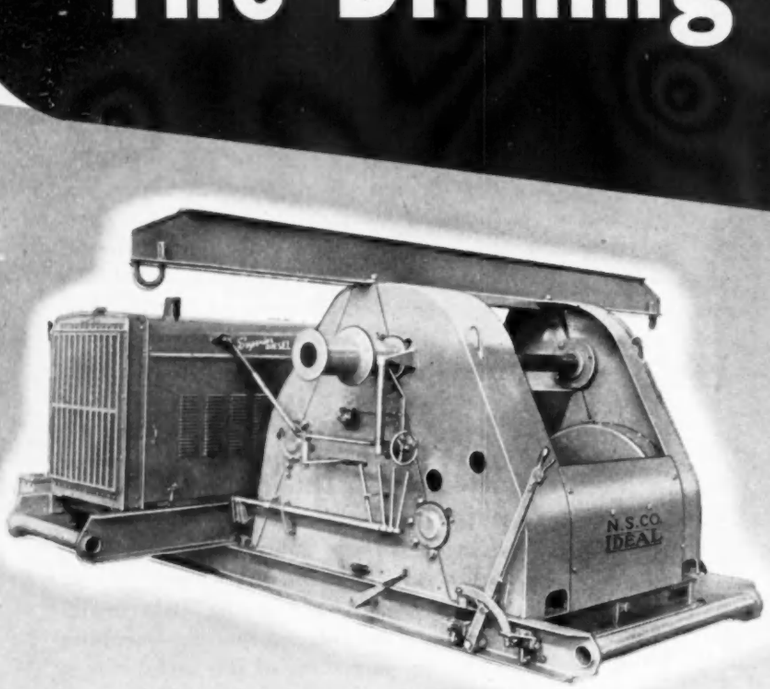

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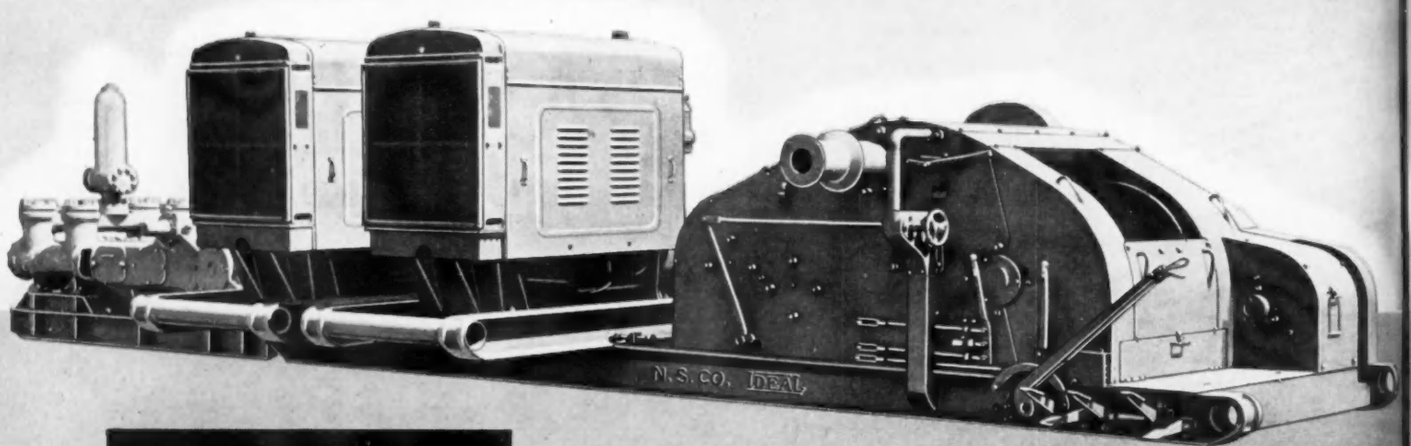

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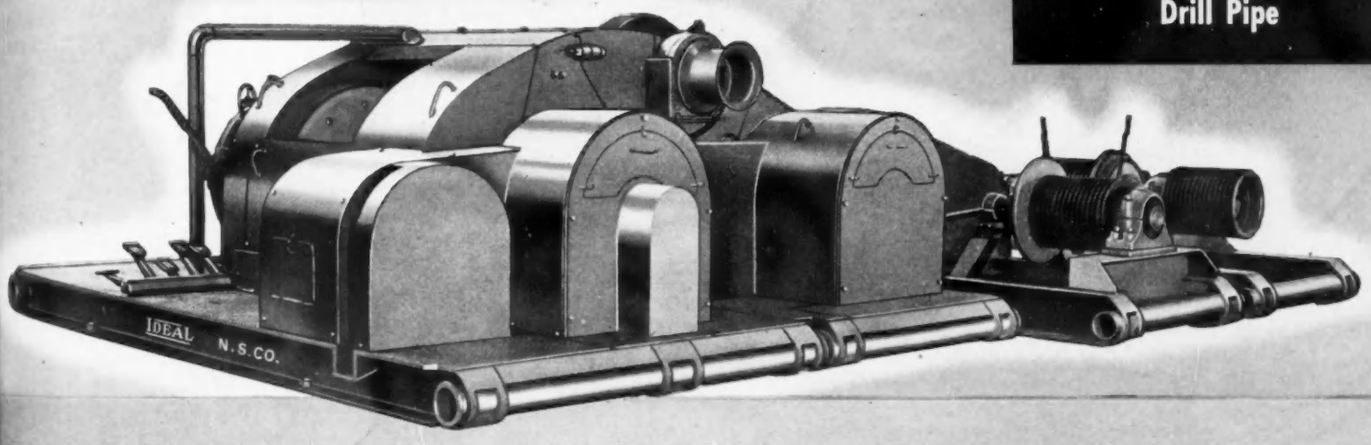

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TABLE 1*

Effect of Area Ratio of Cathode to Anode on Corrosion Rate of the Anode

Cathodic Material	Area Ratio of Cathode to Anode	Corrosion Rate of Iron in One-tenth Normal Sodium-Chloride Solution (Mg Per Sq Dm Per Day)
.....	.....	27 (uncoupled)
Copper.....	1	75
Copper.....	2	114
Nickel.....	1	51
Nickel.....	2	75

* Data taken from U. R. Evans.[2]

any single test can be applied directly only under conditions in which the same ratio of areas exist.

Resistance

The galvanic circuit must be complete through the conducting metals and solutions. Metals are good conductors, and allow easy passage of current; but serious resistance may develop in the solution and in the metal contacts. Galvanic corrosion in distilled water is unusual; but salt solutions are good conductors, and galvanic corrosion is common in them.

Corrosion Product

The formation of solid or gaseous films at the electrodes may interfere with the passage of current. Such interference is called polarization, and usually opposes the original effect. Corrosion product on or near the cathode may screen the cathode from oxygen, and diminish the rate at which oxygen dissolution can occur. Adherent films at the anode may prevent the anode from corroding.[3, 4]

Aeration

In the absence of air (or some other depolarizer) the cathodic reaction cannot proceed in the corrosion of iron in neutral solutions. As a saturated solution of air in water at 25° C. contains only 6 ml of oxygen per liter (equivalent to 0.02 gram of iron as Fe_2O_3), it is evident that in most cases this oxygen supply will be depleted rapidly. In such cases the corrosion will be controlled largely by the rate of diffusion of oxygen to the cathode surface.

As long ago as 1824 Sir Humphrey Davy[5] recognized the importance of dissolved oxygen when he observed that copper in sea water deprived of air underwent no change. More recently F. Frese[6] reported the data reproduced in Table 2, showing quantitatively the marked effect of oxygen concentration on the normal corrosion of iron in salt water. O. P. Watts[7] studied the effect of the complete removal of air on the corrosion of many metallic couples. In every case the absence of air stopped all corrosion. Watts' couples included many which would have been expected to lead to rapid corrosion of iron, provided air was present. The following are examples:

Iron	0.5N NaCl+CO_2 (pH 3.9)	Brass
Iron	0.5N NaCl+CO_2 (pH 3.9)	Copper
Iron	0.5N NaCl+CO_2 (pH 3.9)	Monel
Iron	0.5N NH_4Cl+CO_2 (pH 4.4)	Copper
Iron	Sea water	Graphite
Iron	Sea water	Monel

Other Factors

As galvanic corrosion closely parallels normal corrosion, it is evident that all the factors which influence normal corrosion will have some effect also on galvanic corrosion. Thus temperature, velocity, and composition of the corrosive medium will have some effect. In some cases these even may be so great as to reverse the direction of the galvanic corrosion.

Galvanic-Corrosion Testing

The galvanic behavior of metallic couples may be examined in the following ways:

1. By measurement of the open-circuit potential difference between the metals forming the couple while the metals are immersed in the testing solution.

Such measurements indicate the direction of current flow in the galvanic circuit; but they do not indicate the magnitude of the current, nor the effects of continued current flow.

2. By measurement of the potentials of the electrodes against a standard reference electrode such as the saturated-calomel half-cell.

Such measurements provide a means of following changes in the behavior of the individual electrodes.

3. By measurement of the current generated by the couple throughout a test period. This can be done rather easily by shorting the two electrodes through a small known resistance, and measuring the potential drop across this resistance.

Such measurements show directly the magnitude and direction of the galvanic corrosion, and may be converted into weight losses and corrosion rates by means of Faraday's equivalents. Thus a current density of 10 milliamperes per square decimeter is equivalent on iron to a corrosion rate of 250 mg per square dm per day, or 0.047 inch per year.

4. By measurement of the extent of corrosion of coupled and uncoupled specimens under identical conditions, as by weight-loss measurements.

Such measurements disclose the net effect of the coupling; but they can be made only once, whereas potential and current measurements can be repeated at frequent intervals. Excellent correlations between the results obtained by weight-loss and current measurements have been obtained by W. A. Wesley.[8]

Galvanic Series

From the foregoing discussion of the multiplicity of variables it is evident that, except for the application of specific tests for specific purposes, the principal general information to be derived from galvanic-corrosion tests is the direction of current flow in galvanic circuits, and an indication of those couples in which the potential difference is so small that serious galvanic corrosion is unlikely to occur. On this basis it is possible to construct a galvanic series for the particular set of conditions under consideration. The arrangement of the metals in this series will not necessarily be in the same order as their standard electrode potentials. In fact, the order may vary with the corrosive environment.

Recently LaQue and Cox[9] have constructed such a series from an extensive examination of the available data on the potential of metals and alloys in aerated sea water, Their series is reproduced in Table 3.

In this series the metals and alloys have been divided into groups. Within any group the materials may change places, depending on

TABLE 2*

Effect of Oxygen Concentration on Corrosion Rate of Iron in a 3½ Percent Sodium-Chloride Solution

Oxygen Pressure (Atmospheres)	Milligrams Per Square Decimeter Per Day
0.2.....	12
1.....	51
10.....	472
61.....	1,650

* Data taken from F. Frese.[6]

incidental conditions of exposure; but it would be unusual for changes to occur across the spaces left blank. Metals grouped together have no great tendency to produce appreciable galvanic corrosion of each other. Connecting two metals distant on the list tends to corrode the one higher on the list. In general, the galvanic corrosion will be most serious when the area of the metal higher on the list is small compared with that of the material lower on the list. The reverse situation is not likely to be troublesome. Nickel, Inconel, and the stainless steels occur twice on the list—depending upon whether they are in an active or passive condition. This is controlled largely by the aeration and acidity of the solution.

Although this series indicates which member of a couple is likely to be corroded, it indicates only qualitatively how severe the corrosion may be. The severity of the galvanic corrosion will depend on the actual current flowing—which, as already pointed out, is controlled by many factors incidental to the particular exposure conditions.

Galvanic Tests with Oil-Well Equipment in Salt Water

In 1936 there were carried out for the Eastern District Topical Committee on Materials of the American Petroleum Institute a number of tests pertaining to the galvanic corrosion of dissimilar metals of oil-well equipment in salt-water solutions. Some of the data obtained have been reported briefly in the proceedings of the Institute,[10] but the procedure and results now will be presented in detail for the first time.

Materials

The materials included represented drill pipe, casing, tubing, couplings, valves, and screens. Drill pipe and casing were represented by standard API grade "D" steel and standard API grade "D" plus molybdenum. Tubing was represented by grade "C" in the as-rolled condition (the body of the tube), by grade "C" cold-worked, and by grade "C" normalized (representing the upset end). Coupling materials included SAE 4140 steel quenched and drawn to 300 BHN* (casing joint), and SAE 3140 quenched and drawn to 300 BHN (tool joint). Valves and screens were represented by brass, nickel, 14-to-18-percent chromium steel, and 18-8 chrome-nickel stainless steel.

* Brinell hardness number.
† Hydrogen-ion concentration.

TABLE 3*
Galvanic Series in Sea Water

Anodic (corroded) end
Magnesium
Magnesium alloys
Zinc
Galvanized steel, or galvanized wrought iron
Aluminum 52SH
Aluminum 4S
Aluminum 3S
Aluminum 2S
Aluminum 53S-T
Alclad
Cadmium
Aluminum A17S-T
Aluminum 17S-T
Aluminum 24S-T
Mild steel
Wrought iron
Cast iron
Ni-resist
50-50 lead-tin solder
18-8 stainless steel, type 304 (active)
18-8-3 stainless steel, type 316 (active)
Lead
Muntz metal
Manganese bronze
Naval brass
Nickel (active)
Inconel (active)
Yellow brass
Aluminum bronze
Admiralty brass
Red brass
Copper
Silicon bronze
70-30 copper nickel
Composition G bronze
Composition M bronze
Nickel (passive)
Inconel (passive)
18-8 stainless steel, type 304 (passive)
Monel
18-8 stainless steel, type 316 (passive)
Cathodic (protected) end

* Reproduced from F. L. LaQue and G. L. Cox.[9]

Galvanic Couples

Tests were made on couples 1 through 10 of Table 5. Results were obtained in each of the four manners described hereinbefore, viz., by measurement of: 1, the open-circuit potential; 2, the potential of the electrodes and of the normally corroding specimens against a saturated-calomel half-cell; 3, the current; and, 4, the weight losses of coupled and uncoupled specimens. For this purpose four specimens were used in each jar of the corrosive solution. One pair was coupled through an external one-ohm resistance, and the other pair was insulated. In order to make the greatest use of the facilities available, no duplicates were run.

Test Specimens

The specimens were prepared by Gulf Research and Development Corporation. They were either 4x2x⅛ inch or 2x1x⅛ inch. Their areas are included in Table 5. The electrodes in each galvanic couple had the same areas, but the areas of the electrodes in the first six couples were larger than in the last four.

In order to provide as uniform a surface condition as possible, before use all the specimens were pickled. The carbon steels were pickled in 5 percent hydrochloric acid at 120° F. for 10 minutes, and the low-alloy steels for 20 minutes. In the case of the 14- to 18-percent chromium steel, and the 18-8 stainless steel, nickel, and brass, some nitric acid was added to the pickle. After pickling the specimens were rinsed, dried, and placed in a desiccator for 48 hours.

Test Conditions

The experimental conditions selected as being representative of those to be found in deep wells and as suitable for use in the galvanic tests are summarized as follows:

Electrolyte—Artificial sea water (navy specification 47 S 20)
Aeration—Solution open to air; no air added
Temperature—120° F. ± 2° F.
Volume—4 liters for each couple (4 specimens)
pH† 5.1 to 5.8 (glass electrode)
Motion of specimens—16 ft. per min.

The artificial sea water was prepared according to navy specification 47 S 20, which is given hereinafter:

Navy Specification 47S20 for Artificial Sea Water

Artificial Sea Water

NaCl	23 g
$Na_2SO_4 \cdot 10H_2O$	8 g
Stock solution	20 ml
Distilled water, to make 1 liter	

Stock Solution

KCl	10 g
KBr	4.5 g
$MgCl_2 \cdot 6H_2O$	550 g
$CaCl_2 \cdot 6H_2O$	110 g
Distilled water, to make 1 liter	

It should be emphasized that the electrolytes in individual wells will depart widely from the foregoing composition. In addition to the air content being considerably lower in most cases, mud from the drilling operations and hydrogen sulfide are likely to be present. Although variations in the composition of the electrolyte would influence the results, it was necessary to standardize on some one solution for the galvanic tests. To emphasize the importance of the composition of the electrolyte, the normal corrosion rates of carbon

TABLE 5

Galvanic-Corrosion Tests in Artificial Sea Water

Couples 1 through 10 — Couple 13

Solution ..... Artificial sea water
Volume ..... 4 liters
Temperature ..... 120° F.
pH ..... 5.1 to 5.8
Motion ..... 16 ft. per minute
Ratio of cathode to anode area 1

Time, total ..... 673 hours — 211 hours
Time, galvanic ..... 647 hours — 198 hours
Aeration ..... No air added — Reduced by stream of nitrogen for 6 days and of hydrogen for 3 days.

Couple	Anodic Material	Cathodic Material	Areas (Square Decimeters)		Average Open-Circuit Potential (Volts)	Average Potentials Against Saturated-Calomel Half-Cell (Volts)				Average Galvanic Current (Milliamperes Per Square Decimeter)	Weight Losses (Mg Per Sq Dm Per Day)				Galvanic Corrosion of Anode (Mg Per Sq Dm Per Day)		Total Weight Loss of Anode Plus Cathode (Mg per Sq Dm per Day)
						Anodic Material		Cathodic Material			Anodic Material		Cathodic Material		From Weight Loss	From Current	
			Anodic Material	Cathodic Material		Insulated	Coupled	Insulated	Coupled		Insulated	Coupled	Insulated	Coupled			
1	Grade "D," normalized	SAE 4140	1.13	1.13	0.07	—0.76	—0.75	—0.73	—0.71	2.16	71	112	56	17	44	54	65
2	Grade "D," normalized	SAE 3140	1.13	1.13	0.10	—0.74	—0.73	—0.69	—0.66	3.30	72	140	67	12	71	83	76
3	Grade "D," normalized	Grade "C," as rolled	1.13	1.13	0.001	—0.76	—0.76	—0.76	—0.76	0.07	69	73	86	76	4	2	75
4	Grade "C," as rolled	Grade "D," plus molybdenum	1.13	1.13	0.001	—0.77	—0.76	—0.76	—0.76	0.18	90	91	93	90	2	4	91
5	Grade "C," as rolled	Cr-Si-Cu steel	1.13	1.10	0.05	—0.77	—0.76	—0.74	—0.73	2.07	79	110	45	20	32	52	65
6	Grade "C," as rolled	Grade "C," as rolled	1.13	1.13	0.001	—0.77	—0.77	—0.77	—0.77	0.08	73	74	66	63	1	1	69
7	Grade "C," normalized	18-8 stainless	0.31	0.26	0.59	—0.73	—0.73	—0.16	—0.14	1.34	81	104	2	0.3	24	34	52
8	Grade "C," as rolled	Nickel	0.31	0.31	0.34	—0.70	—0.71	—0.26	—0.39	1.66	69	158	23	1	92	42	80
9	Grade "C," as rolled	Brass	0.31	0.31	0.42	—0.70	—0.71	—0.25	—0.26	1.99	89	142	47	1	56	50	72
10	Grade "C," as rolled	14- to 18-percent chromium steel	0.31	0.31	0.38	—0.74	—0.74	—0.42	—0.36	1.95	127	175	41	1	50	49	88
13	Grade "D," normalized	SAE 3140	1.13	1.05	0.04	—0.77	—0.78	—0.75	—0.74	0.30	16	24	17	0.2	8	7	..

steel in artificial sea water, as determined under various experimental conditions, are given in Table 4.

Procedure

The experiments were carried out in the apparatus described by Fraser, Ackerman, and Sands.[11] The artificial sea water was placed in 4-liter pyrex jars, which were set in a water bath maintained at 120° F. by means of submerged heaters and thermostatic control. The specimens were attached (through insulators of glass, rubber, and bakelite) to an arm that rotated in a vertical circular path at a rate of 16 feet per minute. Adjacent specimens were about 1 inch apart.

Except in the case of the 18-8 stainless steel and the 14- to 18-percent chromium-steel specimens, electrical connections to the specimens were made by means of copper rods screwed into holes which had been drilled and tapped in the specimens. The 18-8 stainless-steel specimens were too thin for drilling, and the 14-18 chromium pieces were too hard. For these two metals the cooper rods were soldered to the specimens. Glass tubes were placed over the copper rods, and the ends filled with ozokerite. The solder also was covered with a layer of ozokerite. This served to insulate the copper and solder, and prevent them from corroding.

The galvanic currents were measured periodically by readings, taken with a potentiometer, of the potential across the external one-ohm resistance. About once a day the circuits were opened, and the open-circuit potentials measured after the circuit had been open 1 hour. At the same time the potentials of each electrode and of the normally corroding specimens were measured against a saturated-calomel half-cell.

After the tests had been completed, the weight losses of all the specimens were determined. The differences between the weight losses of the galvanically coupled and the normally corroding specimens in the same jar were attributed to the galvanic effects. The galvanic-corrosion rate, as obtained from weight losses, was compared with that calculated from the average galvanic current.

Results

The experimental data are summarized in Table 5. Only average values are given for the potential and current measurements; but, inasmuch as these were repeated many times, greater weight should be given to these than to the weight losses which were determined only once.

Fair agreement was obtained between the galvanic-corrosion rates determined from actual weight measurements and those calculated from the observed galvanic currents. The agreement between normal rates of corrosion of the same material in different experiments was poor in some cases. This is ascribed to insufficient control of aeration.

The weight losses in the last column of Table 5 indicate that the total corrosion per unit area in each cell was about the same as in any other cell. This is in accord with the principle of Whitman and Russell[12] that, for the same anode

TABLE 4

Effect of Conditions on Corrosion Rate of Carbon Steel in Artificial Sea Water

Temp. (Deg F)	Motion (Ft Per Min)	Aeration	H_2S Present	pH	Corrosion Rate of Carbon Steel (Mg Per Sq Dm Per Day)
86	16	Saturated	No	8	57
120	16	Open to air, but no air added	No	5.5	82
120	16	Air content reduced by saturating solution with nitrogen or hydrogen	No	5.5	16
120	0	Solution covered with fuel oil	Yes	5	37
120	0	Saturated	Yes	5	94
120	16	Open to air, but no air added	Yes	3.5	335
120	100	No air added	Yes	3.5	1,000

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TABLE 7

Galvanic-Corrosion Tests in Anahuac Drilling Mud

Solution ..... Anahuac drilling mud
Volume ..... 4 liters
Temperature ..... 120° F.
pH 8.9
Aeration ..... No air added

Motion ..... 16 ft. per minute
Time, total ..... 672 hours
Time, galvanic ..... 662 hours
Ratio of cathode to anode area 1

Couple	Anodic Material	Cathodic Material	Areas (Square Decimeters)		Average Open-Circuit Potential (Volts)	Average Potentials Against Saturated-Calomel Half-Cell (Volts)				Average Galvanic Current (Milliamperes Per Square Decimeter)	Weight Losses (Mg Per Sq Dm Per Day)				Galvanic Corrosion of Anode (Mg Per Sq Dm Per Day)		Total Weight Loss of Anode Plus Cathode (Mg per Sq Dm per Day)
						Anodic Material		Cathodic Material			Anodic Material		Cathodic Material		From Weight Losses	From Current	
			Anodic Material	Cathodic Material		Insulated	Coupled	Insulated	Coupled		Insulated	Coupled	Insulated	Coupled			
11	Grade "D," normalized	SAE 4140	1.06	1.05	0.01	—0.82	—0.82	—0.81	—0.81	0.12	10	12	12	7	2	3	10
12	Grade "D," normalized	SAE 3140	1.10	1.03	0.05	—0.82	—0.83	—0.79	—0.78	0.39	12	18	14	2	6	9	10

material, the corrosion is limited by the total area available for depolarization. Thus, under the conditions of test, the open-circuit potential was not the chief factor in determining the rate of galvanic corrosion. As the carbon steel was anodic in all cases, and as it was coupled with an equal area of cathodic material in each cell, carbon steel coupled with SAE 3140, SAE 4140, or Cr-Si-Cu steel corroded at nearly the same rate as steel coupled with the more noble materials, viz., brass, nickel, and stainless steels.

On the basis of the potential measurements in Table 5, it is possible to construct a galvanic series similar to that of LaQue and Cox (Table 3). This series is given in Table 6.

Comparing the two series shows they are in complete agreement. As was pointed out in the discussion of the principles involved in galvanic corrosion, and as is evident from the results in Table 5, this series tells nothing of the magnitude of the galvanic current nor the intensity of the galvanic corrosion. It does indicate, however, that coupling the different grades and tempers of carbon steel with each other will produce practically no galvanic corrosion. It also shows that the alloy steels (coupling materials) would tend to be protected by contact with the carbon steels (drill pipe, casing, and tubing).

Galvanic Tests With Oil-Well Equipment in Anahuac Drilling Mud

Discussion of the foregoing results of the galvanic-corrosion tests of oil-well equipment in salt water by the Eastern District Topical Committee on Materials of the American Petroleum Institute brought out the thought that the galvanic-corrosion rates obtained were higher than encountered in the field, and that the possible inhibiting effect of drilling mud should be investigated. The danger of quantitatively applying galvanic-corrosion data, except under exactly similar conditions, already has been stressed. To determine the effect of mud on the corrosion rates, two galvanic tests were carried out in 1937 in Anahuac drilling mud. These data already have been presented to the Institute,[10] but for the sake of completeness they are repeated in Table 7.

The procedure used in obtaining these data was exactly similar to that described previously for the tests in artificial sea water. The conclusion drawn was that, in Anahuac drilling mud, both the normal and galvanic-corrosion rates were low, due either to the basic condition or to the protective action of colloids in the mud.

Correlation of Results With Practical Experience

It has been stressed that the principal information to be derived from galvanic-corrosion tests is the direction of current flow in galvanic circuits. Other data can be applied quantitatively only under conditions exactly similar to those of the test conditions. The influence of the corrosion solution was brought out by the two series of galvanic tests given in Tables 5 and 7. Also the influence of the conditions in the same solution was brought out in Table 4, wherein it was shown that the normal corrosion rate of carbon steel in artificial sea water might be anywhere between 16 and 1000 mg per square dm per day.

TABLE 6

Galvanic Series for Oil-Well Materials in Artificial Sea Water

Anodic (corroded) end

Carbon steel—
Grade "C," normalized
Grade "D," normalized
Grade "C," as rolled
Grade "D," plus molybdenum

Chromium-silicon-copper steel
SAE 4140
SAE 3140

14- to 18-percent chromium steel
Nickel

Brass

18-8 stainless steel

Cathodic (protected) end

In studying the corrosion of steel by oil-well waste water, Rogers and Shellshear[13] concluded that oxygen was the principal corrosive. Under oxygen-free conditions, and in the pH range from 6.6 to 8.0, they found oil-well waste waters to be non-corrosive, regardless of soluble-salt or hydrogen-sulfide content. This is in accord with the observations of O. P. Watts[7] that the removal of air completely stopped corrosion in many metallic couples. To confirm the importance of oxygen on galvanic corrosion of iron in salt water a single test, described as couple 13 in Table 5, was carried out. This was

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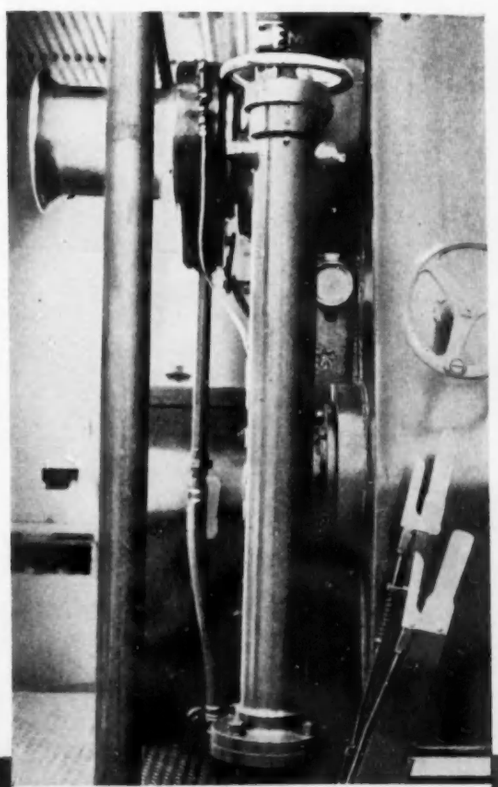

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exactly similar to couple 2, except that most of the air was excluded by a stream of nitrogen or hydrogen passing through the solution. As a result, the galvanic corrosion of the anode dropped to one-tenth of its former value. This emphasizes the fact that whereas the other galvanic tests described in this paper were made with solutions which were not aerated, the solutions were open to the air, and undoubtedly contained appreciable quantities of oxygen. Consequently, the galvanic effects observed in the tests would be expected to be greater than those observed in the field. A galvanic-corrosion rate of 7 mg per square dm per day (couple 13) is only 0.0013 inch per year. Hence, in all those wells in which the oxygen supply is very low or negligible, the galvanic corrosion would be expected to be negligible. Only in those rare wells in which the oxygen supply is high would galvanic-corrosion effects be expected to be noticeable.

Occasional corrosion in air-free wells may be related to the fact that oxygen is not the only depolarizer which permits the cathodic reaction to proceed. Other oxidizing agents may work just as well, and even under completely oxygen-free conditions corrosion may be supported by bacterial action, such as in the anaerobic sulfate-reduction process:[14]

$$H_2SO_4 + 8\,H \xrightarrow{\text{bacteria}} H_2S + 4\,H_2O \quad (5)$$

The bacteria responsible for this reaction are widespread, and require only the absence of oxygen and the presence of assimilable organic compounds and the necessary mineral substances. The bacteria may utilize not only the combined hydrogen in organic food, but also any free hydrogen, such as supplied by the cathodic reaction [equation (3)] in the corrosion of iron.

Acknowledgment

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Steps Make Truck Shelter Accessible

WHERE men of a pipe line gang are carried in a shelter on the service truck, access to the shelter is difficult on account of the elevated truck body and heavy pipe section serving as bumper, winch line guide, and end member of the platform.

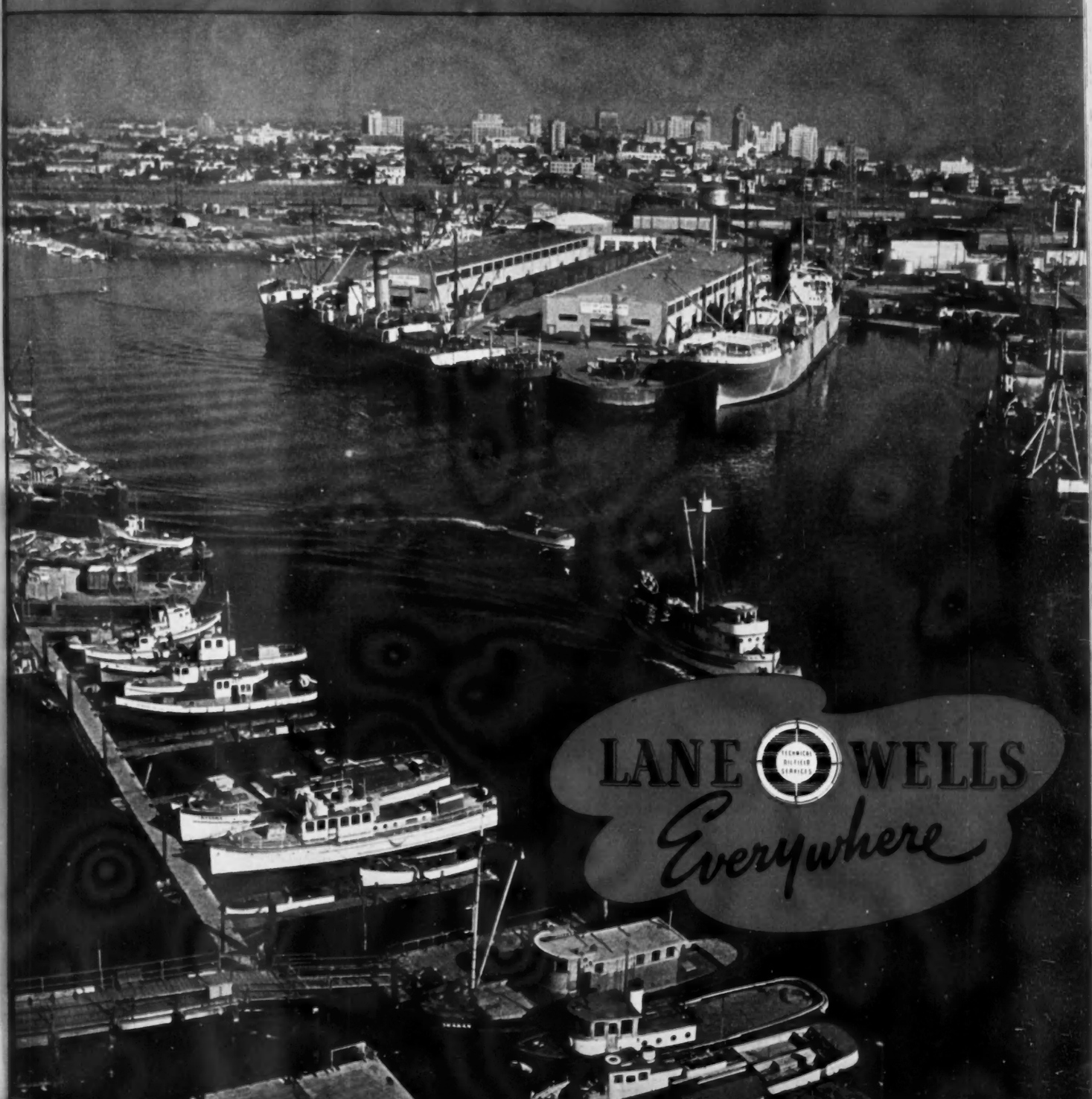
One pipe line company provides each truck with a movable ladder or flight of steps, welded into a unit, with elevated handrails or grips to afford support to a man until he reaches platform level. Extensions below the handrails fit into holes burned through the pipe forming platform end, and hold the steps rigidly. This method of support also enables the steps to be removed when pipe or other long material is to be carried on the truck, or the winch line is to have free sweep across the rear of the truck.

The triangular hole cut into the outer curve of the pipe for the hook on the end of the winch chain enables it to be fastened in place and the slack taken while the hook and chain are in full view of the pipe liner, eliminating accidents occasionally occurring when the hook must be engaged with a projection under the truck.

LANE-WELLS COMBINATION *Electrolog*-SURVEY SAVES DOWN TIME COSTS IN LONG BEACH

Operators in the Long Beach Harbor Field have proved that Lane-Wells Combination *Electrolog*-Survey Service gives them a saving in time of 2 to 2½ hours over that required for the two services individually. This combination service completes file records by giving a complete record of formation characteristics plus inclination and direction of the hole from the surface to the bottom.

If crew time is a factor in your drilling costs—call Lane-Wells for this time-saving service.



Elevated Pumping Unit Solves Problem in Over-Flow Area

Superior Oil Company gets two feet above high-water mark with pumping unit and engine when the Banks of the Wabash wander over Illinois.

ELEVATION of individual pumping units above high-water mark was Superior Oil Company's answer to the problem of recovering oil from a lease in White County, Illinois, that is subject to periodic overflow by the Wabash River. The oil is highly paraffinic, and a special heater unit was devised to make this lease operation even more nearly unique.

The pumping unit and engine are on a steel platform 10 feet from the ground and 2 feet above record water levels. The casing head is flush with the ground, as a precaution against damage by drift wood, and the gas line leads off below the surface. Tubing ring and packing are of usual type but the tubing extends upward to place the polish-rod stuffing box and oil line connection near the level of the platform.

The platform is shop fabricated and erected in the field. It has six supporting posts, two under the front or pumping end of the platform and four closely spaced under the engine. These posts are bolted to concrete footings, and are amply braced. The platform is of steel, to which the machinery is bolted. The floor is cut away to permit the counterbalance to rotate, and an extension platform provides access to the tubing head. The gas line to the engine is underground until it rises with one of the leg supports. The platform is reached by a steel stairway, and has proper guard rails for safety. Except for climbing the stair, servicing the unit is normal in dry weather, while the pumper ties his boat to the stairway during flood periods.

Production is pumped through buried lines to a battery of tanks built on an artificial hill to prevent damage during high water. This oil has a predisposition to deposit a film of ever thickening paraffin on the inside of the lead lines.

As this paraffin is of the type which precipitates at temperatures lower than 80° F. and goes into solution with the oil above 90° F., an oil heater was designed for installation at each well. These heaters are made of short sections of 12-inch pipe having a central flue surrounded by 2-inch pipe set in the annular space between the flue and the walls of the heater.

Each heater has a skirt as a unit base in which the gas burner is placed with valves to control the quantity of gas used for heating. The unit is set on concrete and anchored with guy lines attached to lugs welded on the flue above the body of the heater. Collars are welded at the upper and lower ends of the heater to which the lead line from the tubing head is connected with a 2-inch bolted flange, and the line from the heater to the lease gathering system connected in a similar manner at the lower end.

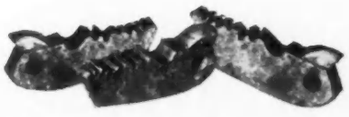
The heater is used at intervals when it is considered necessary. The pumper, being familiar with the line pressure when the pipe is free from obstructions, determines when it is necessary to run the heater. The gauge on the line at the tubing head indicates the pressure on the line when the well is pumping, and when the pressure is abnormal, or when the pressure drop between the well and the tank battery begins to climb, the pumper decides that it is time to light the heater.

The cost of such heaters is said to be in the neighborhood of $50.00, including material, labor and fittings and to set them at the well. No difficulty has been encountered since these heaters have been installed, due to constricted points in lead lines because of paraffin deposits, and no lead lines have been stripped from the ground to be cleaned.

Bits dressed with HAYSTELLITE PRODUCTS set the pace in oil fields everywhere. Get more footage of straight, out-to-gauge hole per round trip by specifying HAYSTELLITE INSERTS and TUBE ROD on your bits. Read these records

EAST TEXAS

This bit, hard-set with Haystellite cast tungsten carbide inserts and hard-faced with Haystellite tube rod, went in at 100 feet, just below the surface pipe, and drilled 2,506 feet of out-to-gauge hole, including 40 feet through the Pecan Gap chalk.



NEAR BAKERSFIELD, CALIF.

These wall-scraper blades, hard-set with Haystellite inserts and hard-faced with Haystellite tube rod, are well-fingered after being used for 198 feet in enlarging a well—a severe test of the abrasion resistance of Haystellite inserts.

TEXAS GULF COAST

This bit, hard-set with Haystellite tungsten carbide inserts, is one of several which made from 310 to 360 feet each in tough going through hard lime and shale formation.

CANAL FIELD, CALIF.

This 8½-inch bit, hard-set with Haystellite cast tungsten carbide inserts and hard-faced with Haystellite tube rod, was still drilling out-to-gauge hole when pulled after drilling 1,119 feet.

• • •

Write for "Haynes Stellite Products in the Oil Fields," which tells how to use these products for best results. Address Kokomo, Indiana or any district office—Chicago, Cleveland, Detroit, Houston, Los Angeles, New York, San Francisco, Tulsa.

HAYSTELLITE
Cast tungsten carbide diamond substitute

HAYNES STELLITE COMPANY
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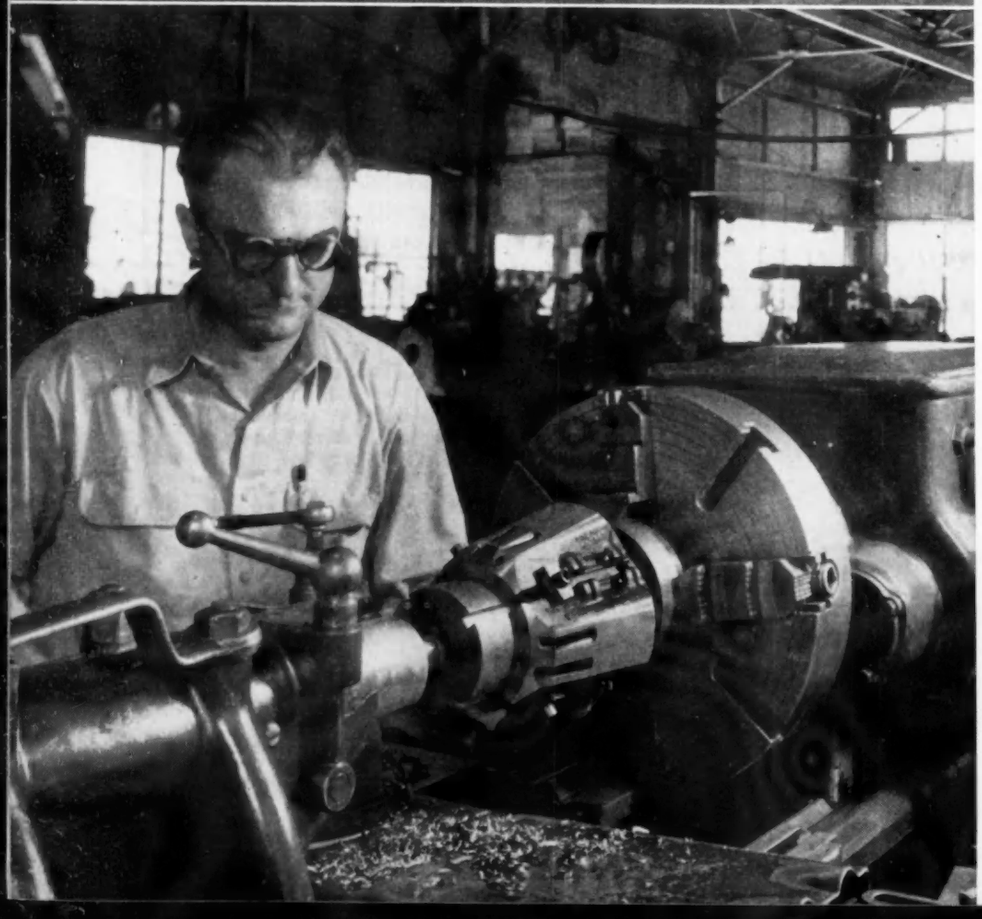
Our Field is the



. . . and KINZBACH

Tubing Slips Call for Fine Casting Technique

KINZBACH TUBING SLIPS have won wide-spread popularity, thanks to numerous features which insure safe, easy handling of today's longest tubing strings. Four-segment construction means high flexibility: minimizes cutting and eliminates bottle-necking the pipe. Grooved slot for gated bowl permits easy application to tubing without breaking connections, insures correct position, and keeps abnormal strain off of any one part of the assembly. Cored segments allow fluid to drain back into the hole. Length and position of handles provide maximum safety to workers. Hinging arrangement prevents spreading. Several sizes of tubing are handled with one set of slips by changing inserts.

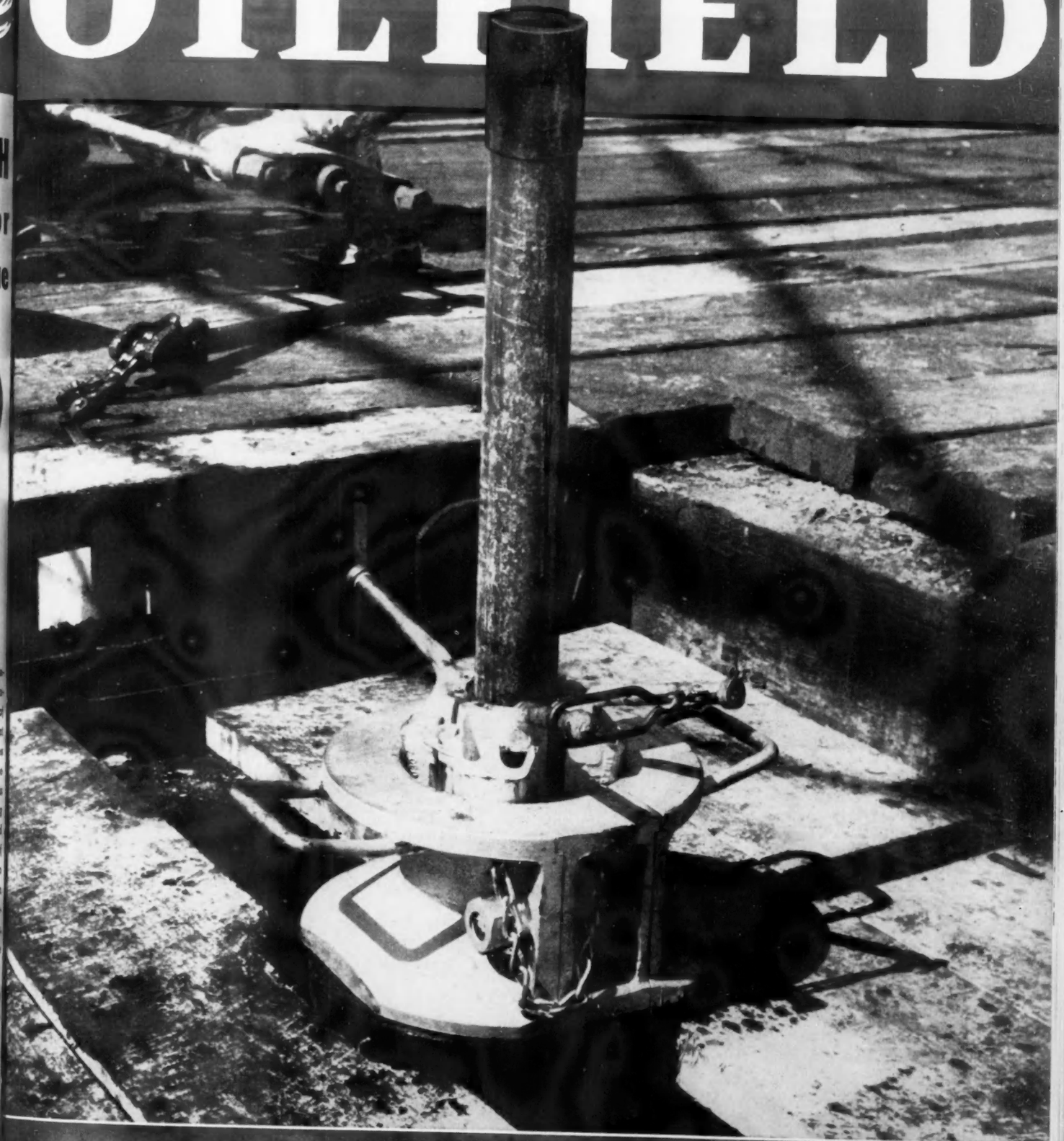
KINZBACH TUBING SLIPS are cast by TESCO from highest grade alloys. The small segments, weighing only a few pounds each, are difficult foundry work. They represent tedious, careful procedure. They require precision metallurgical control which they, like so many other fine oil industry products, are given only in the TESCO foundry.

At left: 56 tubing slip and 12 rotary slip segments (above) are ready for delivery to Kinzbach. A Kinzbach operator (below) puts the finishing touches on a tubing slip assembly.

TEXAS ELECTRIC STEEL CASTING CO
HOUSTON, TEXAS

Largest Producers of Alloy Steel Castings for the Oil Industry

OILFIELD



TESCO

DRILLING CONTRACTORS' NOTEBOOK

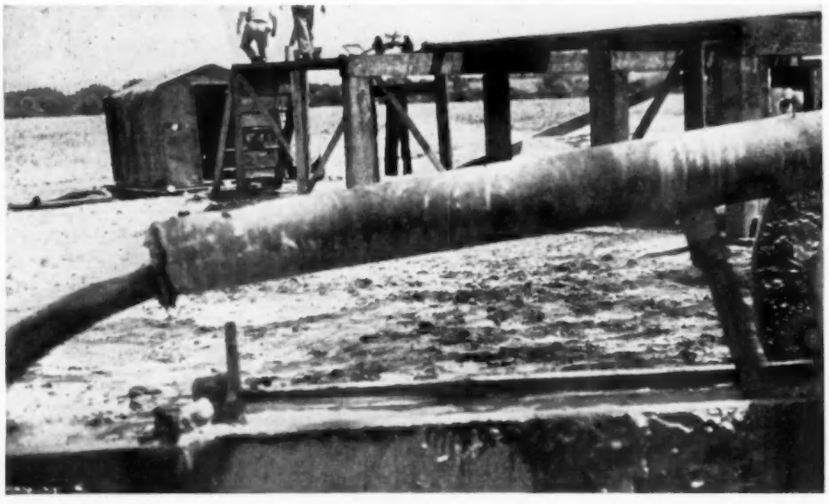
Helpful Suggestions For Those Interested In Drilling Methods

Operating Ideas Maintenance Hints New Rig Hook-ups

Published as a regular feature of THE OIL WEEKLY

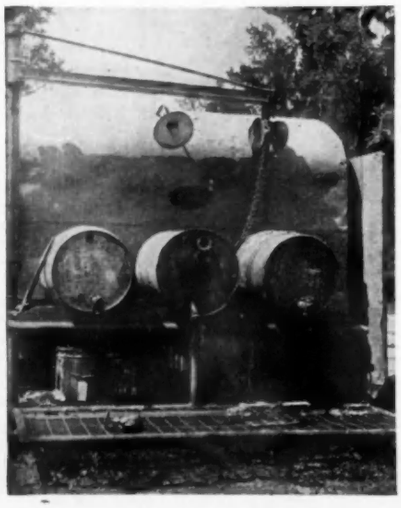
1. MUD HANDLING

Cuttings Deflector in the Mud Pipe Aids in Sampling



This cuttings deflector, inserted in mud pipe, permits classification of formations.

TO examine cuttings in the drilling-mud stream, Noble Drilling Company cuts a small hole in the pipe from the well head to the shale shaker, inserting a short nipple to direct a split stream of the returns to a trough immediately below. The sample grabber may obtain a sample either by washing the cuttings from the trough or by holding a pail beneath the nipple.



A spur-geared chain hoist simplifies handling of oil drums at this rack.

2. LUBRICATION

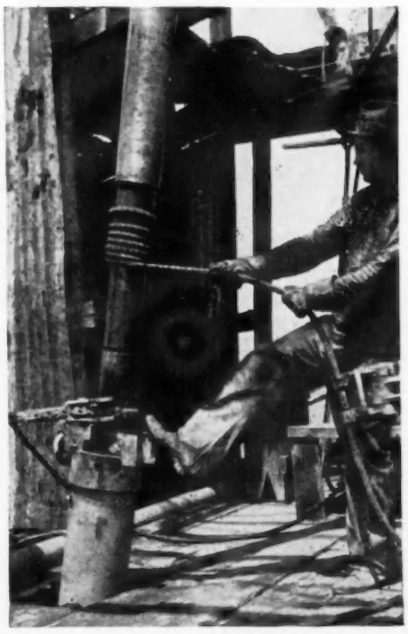
Chain Hoist Aids in Drum Handling

A ½-ton spur-geared chain hoist features a barrel rack used by one operator. The hoist boom is swung on a section of 5-inch pipe which constitutes one leg of the bench. The bench itself is constructed of sections of 4-inch pipe, welded in box form. Steel flanges welded to front and rear top rails are notched to provide a seat for the barrels. One section of the bench is enclosed with steel plate to form a storage bin and the remainder of the bench floor and a hinged front panel are of steel grating. The entire assembly is skid-mounted. A permanent light fixture projects from the side of the dog house, providing extra illumination without extra wiring.

3. DRILLING

Collar Aids to Make Up Drill Pipe

WHEN making a rathole connection, much time may be saved if a collar is used for hoisting the the joint of drill pipe from the walk with the derrick line to the kelly rathole. The collar used by



Special collar supports joint of drill pipe while in kelly rathole, while back-up tongs keep joint from turning.

THIRTY-NINE

Submersible Drilling Barges Now In Service

THE SUBMERSIBLE Drilling Barge has conclusively demonstrated that it permits of greatly reduced drilling costs . . . more rapid production . . . increased stability . . . reduced maintenance . . . time saving . . . flexibility of operation.

Today 39 Barges are in service. Companies licensed to use them include:

BARGE DRILLING COMPANY
SHELL OIL COMPANY, INCORPORATED
GULF REFINING COMPANY
SUN OIL COMPANY
LOFFLAND BROTHERS COMPANY
THE SUPERIOR OIL COMPANY
TIDE WATER ASSOCIATED OIL COMPANY

TEXACO DEVELOPMENT CORPORATION

A Subsidiary of The Texas Corporation

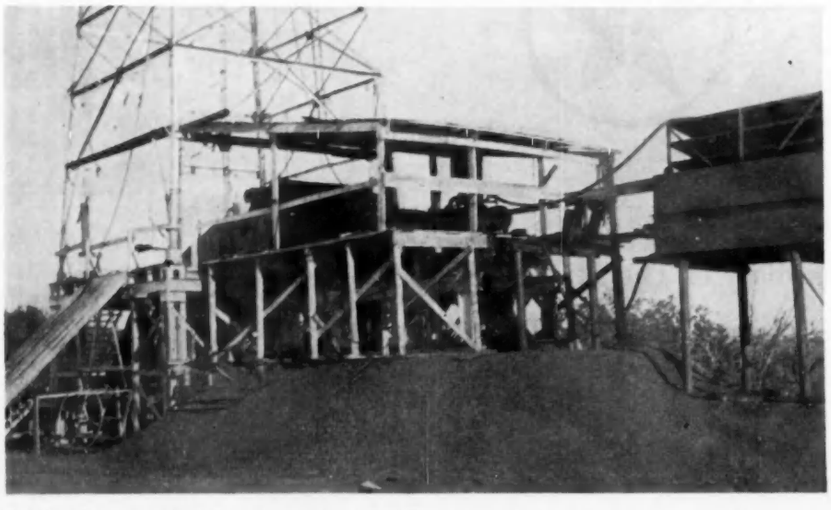
26 Journal Square • Jersey City, N. J.

R-G. Drilling Company in Hull-Silk fits snugly around the pipe below the tool joint with a flat flange which slips into the protector on the kelly rathole casing. A ring on one side serves for hooking the derrick line, and a bolt on the other side prevents the collar from slipping away from the joint of pipe. Slots in the protector are cut to receive the front fingers and the back section so the pipe is always in the same position. The spinning line is used in the conventional manner, and a pair of back-up tongs used to prevent the joint from turning while the tool joints are spun tight.

4. RIGGING UP

Mud-Pit Earth Used for Mounts

INSTEAD of piling dirt from mud pit excavations away from the rig, Fain Drilling Company uses part of the earth upon which to build the engine substructure and to mount the water cooling tank. When the derrick substructure is erected, planking is placed against the legs on the side where the engine is to be placed to prevent earth from spilling into the cellar and around the casing controls. The top of this mound of earth is then flattened and made ready to receive the engine substructure. A short distance from this substructure, a second mound is flattened for supports of the water cooling tank.



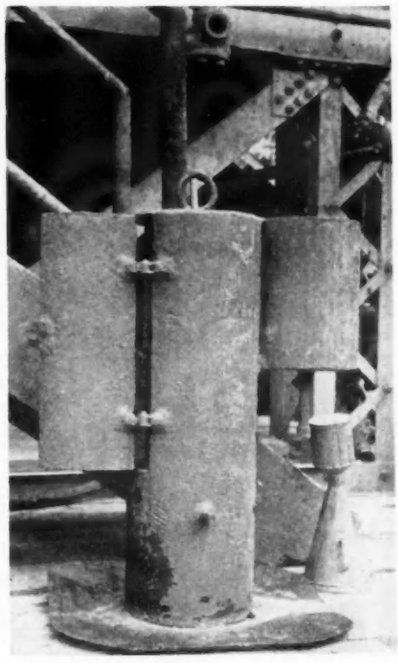
Earth from mud-pit excavations provides mounts for the engine substructure.

5. MUD TESTING

Cabinet Protects Equipment

TO expedite mud-testing and to guard against loss or breakage of the testing equipment, one operator has devised a storage container for use on rigs operating in the Thompsons field, Fort Bend County, Texas.

Body of the container is a 3-foot 6-inch section of 12-inch pipe tack-welded to a 2½foot square steel-plate base. Corners of the base are rounded off with a torch to avoid foot injuries from sharp edges. A door is cut in the upper part of the container. Clevises are used for hinges, a small piece of scrap iron is used for a latch. The top of the container is blinded with a circular steel plate, and a bail or eye is welded to the top of the plate to aid in loading and unloading. A 2½-inch circle is cut in the top plate to accommodate an 18-inch section of 2½-inch pipe, closed at the bottom, which is used as a float chamber for the mudweight hydrometer. A short section of large pipe is welded to the container and holds water with which to wash the funnels and containers. A drain or plug is placed in the bottom plate of this receptacle. The interior of the main container is used to store testing apparatus when not in use.



This container protects mud-testing equipment on the rig and in transit.

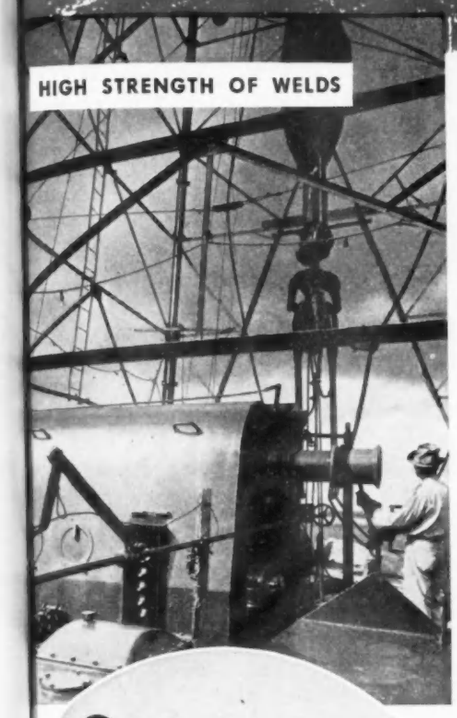
6. LIGHTING

Gas Is Auxiliary Source

QUINTANA Petroleum Company, to supplement electric lighting facilities around its rigs, taps the gas line to the boilers with a series of T's carrying valves and risers. At the top of each 16-foot riser is a second T, fitted with two short nipples, the lower half of which has been cut away as far as the threads engaging the T.

By cracking the valves at the riser bases, serviceable gas flares are formed which, lighted on electrical failure, provide workable light around the rig and enable operations to be continued pending repair of the standard equipment.

Only ALLOY STEELS
Provide all these advantages

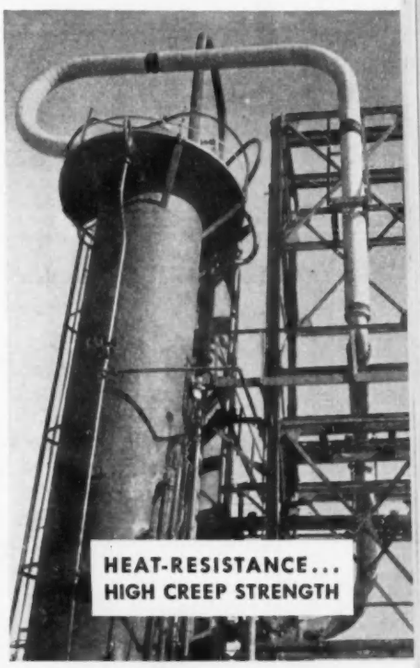


HIGH STRENGTH OF WELDS

When weight and space limitations demand that smaller sections carry heavier loads—safely—the answer must be alloy steels. Under repeated stress, tensile strength and hardness do not necessarily indicate fatigue properties. Rather, the load-carrying ability of a steel depends upon the alloy constituents and the form of the structure at the time it is bearing the load.

HIGH FATIGUE QUALITIES

Where steels of high elastic properties and strength are needed, and especially where weight reduction is important, low carbon complex alloy steels properly welded offer distinct advantages. Such alloy steels at equal or higher yield points show lower weld hardening, improved resistance to corrosion, improved ductility of weld, better retention of toughness at subzero temperatures and better creep resistance at high temperatures.

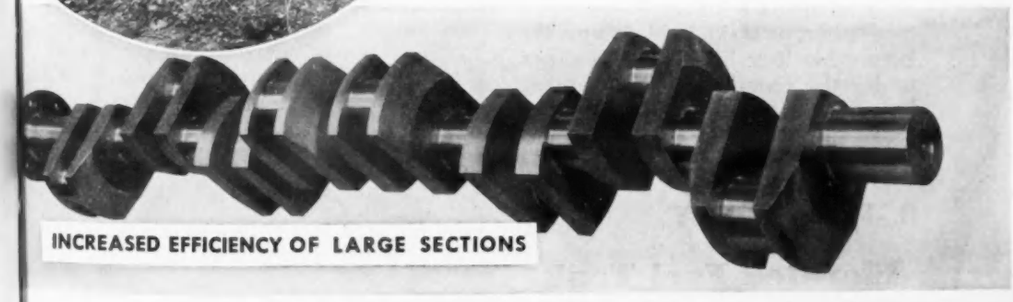


HEAT-RESISTANCE... HIGH CREEP STRENGTH

When steel parts and equipment must withstand high pressures and elevated temperatures, no ordinary steel is suitable. This is exclusively a field for alloy steels—steels that have proved their high resistance to creep—steels that maintain high strength up to 1800° F.—steels that resist oxidation and therefore do not lose their strength appreciably through reduction of section.

HIGH PHYSICAL PROPERTIES

Despite the improvements in fine carbon steels, such steels are limited in application—leaving a wide field where only alloy steels are truly economic. When machine design limits the size of a part—when high strength must be combined with light weight—when surface hardness and ductility must be held within close limits on production parts—then alloying elements are important—to produce a steel to do a definite task—to do more work with certainty of results at lower cost.



INCREASED EFFICIENCY OF LARGE SECTIONS

When sections are large—when hardness must be carried deep into the steel—as in shafting, heavy crankshafts and piston rods, large gears, axles and heavy connecting rods—alloy steels are necessary and the cost low in proportion to results. In such parts, with carbon held constant, the depth-hardening quality increases as the alloy content is increased.

Republic—world's largest producer of alloy steels—will be glad to recommend the correct steel for any specific use. Write Republic Steel Corporation, Alloy Steel Division, Massillon, Ohio; General Offices, Cleveland, Ohio.

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Republic Alloy Steels
—AN ECONOMIC NECESSITY IN THE MANUFACTURE OF OIL COUNTRY EQUIPMENT

DRILLING CONTRACTORS' NOTEBOOK

7. SAFETY

Sturdy Tie-Down Necessary for Get-Away Line From Derrick Floor

This hold-down for derrick floor get-away line will not loosen in its hole.

THE purpose of a quick get-away line from the derrick to the ground may be defeated if the hold-down which secures the line can be loosened in its hole by swaying of the derrick, or pulled loose when a worker is coming down the line.

Republic Production Company prevents this by using two upright posts of 3-inch pipe, cemented in the ground, and spanned by another section of pipe to which the line is tied. The central section of the horizontal member is threaded at either end to engage threads in the end sections of this crossbar. Tension in the line, which is wrapped around the crossbar and looped over a projecting stud, may be varied by turning the central section with a 36-inch wrench. Set screws may be used instead of threads on the rotating member.

A worker sliding down the line is not liable to crash against the hold-down, as with certain types of single-bar, or stake hold-downs. By lifting his legs he is able to shoot under the crossbar at the moment he releases the line.

This structure for the fuel tank eliminates the need for a fuel pump.

8. FUEL SUPPLY

Elevated Fuel Tank Eliminates Pump

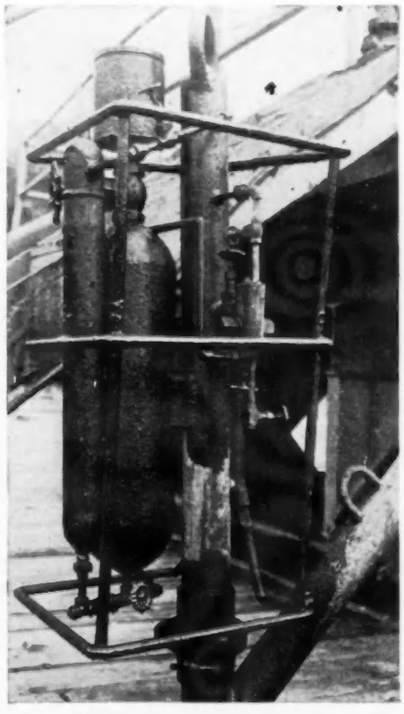
FAIN Drilling Company, finding it necessary to elevate the Diesel fuel tank to a greater height on one well than usual, mounted it by welding risers to the top of the ordinary supports. The risers were tied together at the top with cross members upon which the skid type base of the fuel tank rests.

The added height provided sufficient head for the fuel to flow to the engines without pumping or starving the power units.

9. SAFETY

Guard Surrounds Hot Lubricator

TO safeguard employes who might lurch or fall against a hot lubricator, one major company constructs a simple but effective guard of sucker rod material. The welded guard completely encircles the lubricator with members so spaced that no considerable bodily contact is possible, yet there are no projections that interfere with rapid installation or easy loading. The guard is also effective in protecting the lubricator connections in transit.



This guard of sucker-rod material lessens the danger of contact with a hot lubricator at a Gulf Coast district rig.

HIGHLIGHTS IN THE WEEK'S NEWS

Washington

Congress Probably Will Not Act Now on Oil Legislation

Indications that no further action on oil legislation will be taken in Congress until after the expected summer recess, which will run from shortly after the Democratic National Convention probably until October, were seen this week in disclosures that two House subcommittees considering oil matters have their reports practically ready but do not plan to submit them immediately.

Representative William P. Cole, Jr., of Maryland, chairman of a House Interstate and Foreign Commerce Committee group handling the Administration bill for federal control of production, said this week that his report has been written. He refused, however, to indicate what recommendations, if any, were to be made, or when the report was to be submitted to the full committee.

Congressman Edward J. Hart of New Jersey, chairman of a Merchant Marine and Fisheries subcommittee investigating the tanker situation, said he was prepared to write his report, but did not expect to do so until after the Democratic convention. Indications are that unless Congress stays in session for some days after the convention, the report will be delayed over the recess. He too, would not say what he would recommend, but indicated the belief that the tanker situation has cleared itself up and Congressional action would be unnecessary.

Wilson Suggests Government Accumulate Aviation Gasoline

The contribution of the oil industry to the national defense program may lie, not in its historic task of supplying the military services with their petroleum requirements but in studies which may open up new and important fields in other lines, some of which may carry over into future peace times, such as the production of toluene and synthetic rubber by some of the newly developed processes which start with petroleum raw materials, it was disclosed in Washington this week.

Itself in a position where it can meet the petroleum needs of the national defense program with little effort, the oil industry is seen by the commission as affording possible aid to that program in other fields.

"Inasmuch as these studies are largely technical and confidential, it is not possible to discuss in detail the progress which is being made," it was explained by Dr. Robert E. Wilson, oil adviser to the National Defense Advisory Commission, in discussing the oil situation, "but it seems significant that instead of having any bottlenecks of its own, petroleum is now being called upon to help eliminate bottlenecks in other industries."

So far as the oil situation itself is concerned, Dr. Wilson said, the commission now is surveying the needs of the Army and Navy for various oil products, and points at which heavy demands may be made, with a view to comparing these requirements with the productive capacities of industry units and the making of recommendations as to the best means for eliminating bottlenecks—through purchases of reserve stocks, building new plants either with or without government aid, and, possibly, alternatives or modifications of specifications so that government requirements can be met promptly and economically.

Aside from the possibility of heavy emergency demands arising at unexpected localities for such supplies as Navy-grade fuel oil, Dr. Wilson said, the only deficiency in the industry lies in the lack of 100-octane gasoline, of which he recommended large stocks be accumulated for defense purposes.

This, he indicated, offers no problem to the industry.

"So far as the petroleum industry generally is concerned, its growth since the last war has been so great that even satisfying the demands of a mechanized army presents no serious problem," said the commission's adviser.

"Only in the case of the relatively new product, 100-octane gasoline, containing synthetic high-octane blending stocks, does special attention now seem necessary. But even here it appears that the needs can be met adequately by prompt government action directed at building up stocks of this important product and increasing its own storage with particular emphasis on the desirability of underground storage facilities in localities that might be vulnerable above ground.

"Ordinary aviation gasoline of 92 or lower octane presents no problem."

Offers of cooperation have been received by the commission from many industry organizations, Dr. Wilson said, but explained that at present the matters under study are technical problems on which individual rather than group assistance is required.

Bureau of Mines Reports Ready for Emergency

Mobilization of the Interior Department for the furtherance of the national defense already has been largely accomplished, it was reported to Secretary Harold L. Ickes, July 8, by the departmental defense resources committee.

A survey of the department's possible contribution to the defense program, it was reported, showed that the helium plants of the Bureau of Mines can furnish enough gas to care for any new lighter-than-air craft which may be authorized, and is developing new and improved methods of extracting petroleum and for its refining.

Both the Bureau of Mines and the Geological Survey are furnishing the National Defense Advisory Commission with information regarding deposits of oil and other strategic minerals, and other branches of the department also have expanded those services which will be of importance in carrying out rearmament.

"In considering the role of the various bureaus and offices of the department in a defense program, the defense resources committee recognizes that the conversion of the department from its normal affairs to national defense functions requires no extensive realignment of assignments or functions," the report declared.

"As the department now operates, its full participation in the national defense program will require merely an intensification of effort to the degree made necessary by the demands upon it. It has the technical knowledge, the technological skills and facilities, the expert familiarity with subject matter and the wide acquaintanceship with basic resources and production processes required in a defense effort. These are ready for immediate use by any authorized agency.

"So too is available to authorized agencies the pool of scientific data and statistics built up by this department over the years in many fields. In fact, this reservoir of information already is being put to use by defense agencies."

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Allowables

Oklahoma Proration Meeting Scheduled for July 26

Oklahoma purchasers and producers will meet at Oklahoma City July 26 at 10 o'clock a. m. to determine the market demand for crude oil during August and formulate a recommendation to be made to the Oklahoma Corporation Commission.

Operators will decide whether or not in the future hearings will be each month or every three months. Since

the group has not met but once in the past three months, pool allowables will be carefully adjusted at this meeting.

Texas Gas Hearing Set

The Texas Railroad Commission has scheduled its monthly hearing to fix gas allowables for July 18. No unusual evidence is expected.

Apparently the commission does not intend to hold an oil hearing in July, as the custom has been to combine the two hearings on some date before the twentieth of the month, in order to comply with the provisions of the gas statute, and thereby avoid two hearings.

Permit Panhandle Sour Gas Wells Full Potential

An unusual permit for gas operations has been granted to F. C. and E. P. Henderson by the Texas Railroad Commission which authorizes the company, operating numerous sour gas wells in Hutchinson County in the Texas Panhandle, to produce these wells at potential.

The order provides that the gas is to be processed for gasoline, and the residue is to be used for the repressuring of oil sand. The only allowable gas to be charged against a well is that which is not returned to the sand.

Exempt Eight Texas Fields From Shut-Downs

Eight oil fields have been exempt from shut-down orders of the Texas Railroad Commission, the first exemptions ordered since shut-downs were instituted in June by an order issued on May 24.

One order issued last week exempts Hendricks, West Columbia, Barber's Hill, Big Lake and Mission River from all shut-downs in June, July and August, and another order exempted Iatan-East Howard, Howard Glasscock and Snyder fields from July and August shut-downs.

Turner Valley Allowable Boosted to 21,000 Barrels

The Alberta Conservation Board last week increased the allowable for Turner Valley, only major oil field of Western Canada, from 18,000 to 21,000 barrels daily. The new order increases the average per well allowable from 175 to 189 barrels daily.

Eight new oil wells have been completed in Turner Valley since the last proration order on May 13, bringing the total for the field to 111. Highest allowable assigned to a well is 491 barrels. Five other wells were given allowables above 400 barrels.

Phillips Plans Water Flood For 100 Acres, Nowata County

Permission has been requested of Oklahoma Corporation Commission by Phillips Petroleum Company to water flood approximately 100 acres in 23-26n-16e, Nowata County. The property is at present producing unprofitable volumes from Bartlesville sand between 520 and 560 feet.

Pipe Line

Authorize New 18-Mile K-M-A Outlet and Pump Station

Gulf Refining Company has authorized construction of an 18½-mile 6-inch welded crude line to extend from the center of the north portion of the K-M-A field to Burk station, a mile south of Burkburnett, where it will tie into the company's North Texas trunk outlet.

Construction contract will be awarded within 10 days, with work to start about August 1. A new K-M-A field station will be erected in SEc Block 20, H. George Survey, A-454, using two 5000-barrel capacity pumping units. This site permits use of gravity for gathering the bulk of the oil from connections north of the river. Upon the completion of the new unit, approximately 45 miles of 4-inch line will be salvaged from loops added over a period of years in transporting runs from Archer County and K-M-A via Electra and the Burkburnett district to Burk station.

Purchasing for Fort Worth-Oklahoma City Gasoline Line

Magnolia Pipe Line Company is purchasing right-of-way for construction later this year of a 200-mile 4-inch gasoline line to extend from Magnolia Petroleum Company's Fort Worth refinery to Oklahoma City and intermediate points. The pipe is being received and stored at leased pipe yards between the two cities, but construction will be deferred for some months because rehabilitation and enlargement of the Fort Worth plant will not be completed until next March. The company has a 31-mile 3-inch gasoline line that has delivered a portion of the plant's output to Dallas since July, 1930.

Provide Outlet for Opelika; To Build Recycling Plant

Lone Star Gas Company has started construction on a 22-mile 12-inch natural gas line outlet for the Opelika deep gas-distillate field, Henderson County, Texas, to connect with its Cayuga-Irving 20-inch line at Trinidad, where the company operates a 100,000,000-cubic-foot daily capacity natural gasoline plant.

Using its own construction crew, the company will complete the line, which will handle about 25,000,000 feet of gas daily under well pressure, within 45 days. Lone Star Gasoline Company and Shamrock Oil & Gas Corporation acquired the bulk of the acreage on the Opelika structure with two gas-distillate wells and a small oil well last February.

New Wasson Field Outlet Starts Oil Running July 15

Fourth pipe line outlet for the Wasson field, largest oil producing area in West Texas, became available July 10 through completion of the Basin Pipe Line Company's 93½-mile 6-inch welded trunk line to Cosden Petroleum Corporation's refinery at Big Spring, Texas. The initial movement of crude has been set for July 15, with the latter paying the prevailing field posted price at the well plus a transportation charge of 12½ cents per barrel. The carrier erected field booster station near SE SE PSL Section 43, Block AX, southeast edge of the field, and a gathering system, embracing 3½ miles 6-inch and 16½ miles of 4-inch, connects to leases owned by Basin States Oil Company, Amon G. Carter, Continental Oil Company, Honolulu Oil Corporation and Texas Pacific Coal & Oil Company, each owning 6 percent interest in the line. The line has a rated capacity of 7500 barrels daily, using a single booster and supported by an elevation drop of 1100 feet.

Claude L. McIver is president of Basin Pipe Line Company with headquarters at Big Spring.

Complete Panhandle Line To Moore County Plant

Shamrock Oil & Gas Corporation has completed construction of a 30-mile 5½-inch crude line extending from its McKee refinery, Moore County sector of the Texas Panhandle, to the Herring pool, near Stinnett, Western Hutchinson County. A booster station for the latter area is located near the center of the S. B. Evans Survey. Field gathering system will be installed to make outside well connections in addition to the handling of 53,000 barrels monthly to be supplied on contract by Standish Pipe Line Company, subsidiary of Phillips Petroleum Company. Hutchinson County crude purchases have heretofore been handled by tank car over the Rock Island Railroad to the McKee plant.

Appalachian Meter School Proceedings Published

The proceedings of the Second Annual Appalachian Gas Measurement Short Course have been printed in book form and distributed to all who were registered at the 1939 meeting.

This second short course was held in Morgantown, West Virginia, last August. Over 400 gas men from the Eastern United States attended.

The dates for the third meeting of the school, which will be conducted under the chairmanship of Ray W. Hitchman, superintendent of gas measurement for United Fuel Gas Company, Charleston, have been announced as August 19-21, 1940.

The proceedings of the 1939 school cover papers read and discussed on the general theme, "The Theory and Practice of the Measurement and Control of Gases." It is a paper-cover, bound volume of 478 pages containing photographs, charts, curves and diagrams to make the text interesting and easy to follow.

A limited number of extra copies are available which can be obtained by addressing G. R. Spindler, director of the school, at West Virginia University, Morgantown, West Virginia.

Authorize Water Flood

Cable Oil Company has been granted permission by the Texas Railroad Commission to conduct a water flooding program on its J. S. Webb leases in Blocks 4, 5 and 9, I&GN Railway Survey, Archer County, Texas. The order included leases operated by White and Duncan.

MEN IN THE INDUSTRY'S NEWS

H. D. COLLIER has been elected president of Standard Oil Company of California to succeed William H. Berg, who died June 26. Collier has spent practically his whole business life with the company, and his elevation to the presidency from the post of senior vice president adhered strictly to company precedent in selection of a new head.

Joining the company as a mechanical salesman at Seattle July 15, 1903, at the age of 27, Collier has been continuously employed by the company. After serving two years, he was appointed fuel oil salesman in the Pacific Northwest and engaged in the work of introducing the use of fuel oil, serving in Portland, Tacoma and Seattle. In 1910 he was appointed assistant district sales manager in San Francisco and advanced in 1912 to district sales manager. In 1916, he was made assistant manager of sales, with headquarters at the home office. In 1919, Collier became manager of the refined oil and naphtha division, and in 1922 was appointed general manager domestic, refined and lubricating sales and served as a member of the transportation, sales and administrative committees. He was named a director in 1924, and a vice president in 1931.

H. D. COLLIER

EDWIN B. HOPKINS, 57, vice president of Drilling & Exploration Company and American Maracaibo Company, died July 5 of a heart attack in Dallas, where he had resided since 1929. A native of West Virginia, he prepared for a geological career in attending the University of West Virginia, George Washington University and Cornell University. Initial employment was with the West Virginia and United States Geological Surveys. This service led to an assignment with Mexican-Eagle Oil Company in Mexico, where he later became superintendent of explorations. He later spent several years in Central America and Cuba on a special geological assignment. In 1916, he eseablished an office in Washington as a consulting geologist, and continued in this capacity until 1929 when he moved to Texas. He was an active member of the American Association of Petroleum Geologists, serving as vice president in 1934, and American Institute of Mining and Metallurgical Engineers.

JOHN R. PARKER is in charge of Gulf Refining Company office recently opened in Evansville. With him are G. B. Fitzgerald, Indiana scout; Jack Bevel, Kentucky scout; C. W. Honess, district geologist; Charles Matthews and Dave Schock, land man.

A. C. RUBEL, vice president in charge of production for Union Oil Company of California, and Earl Noble, chief geologist, both of Los Angeles, were in Vermilion Parish, Louisiana, to watch production test on the company's first Louisiana wildcat, an apparent opener of a new pool in the White Lake area.

O. G. LEICHLITER, president of Mudge Oil Company with headquarters at Pittsburgh, visited the company's Dallas district office early last week while en route to West Texas to witness the completion of the firm's first well in the Soma shallow pool.

C. R. NICHOLS, Southwest Texas district geologist for Sun Oil Company, has resigned to engage in consulting work and will continue to maintain headquarters at McAllen. He has been relieved by L. C. Smith, who has specialized on subsurface work on the district while stationed in the Dallas office.

ROSS LONG, with the Sun Oil Company production office in Corpus Christi, is being transferred to Dallas on his return from vacation July 15. He will be replaced by James Rogers of Dallas.

J. W. RAWLEY has returned to Corpus Christi from Illinois to become land man in that district for Seaboard Oil Company. Rawley was transferred to Illinois from South Texas two years ago.

E. E. HOLSTEIN, assistant chief engineer of Magnolia Petroleum Company at Dallas, has been promoted to head of the department, succeeding the late Jos. M. Williams. R. G. Watts has been appointed assistant in charge.

JOE M. CARTER, civil engineer for Humble Oil & Refining Company in South Texas, was called to Ennis, Texas, last week on the death of his stepfather.

JOHN MOWINKLE, San Antonio geologist and engineer, is in Wyoming checking properties for San Antonio interests.

H. L. CURRY, scout for Deep Rock Oil Corporation, has been transferred from Mississippi to the Tulsa office.

HENRY L. PHILLIPS, who entered the employ of the old Sinclair Oil & Gas Company in 1916 and who has been president of Sinclair Prairie Oil Company since its organization in April, 1932, is transferring his headquarters from Tulsa to New York where he will take a post in the executive department of the parent Consolidated Oil Corporation.

Phillips, a law graduate of the University of Ohio, became vice president of Sinclair Crude Oil Purchasing Company in 1921, and president the following year. He was named president of Sinclair Oil & Gas Company in 1930, and two years later became president of the successor, Sinclair Prairie Oil Company.

In his new post, he will continue to spend as much time as necessary in field operations of the company.

H. L. PHILLIPS

STANLEY THOMPSON, Fort Worth producer, has been elected president of the Fort Worth Baseball Club, a unit of the Texas League. He previously served as head of the club in 1937-39, during which period it obtained two championships.

MALVIN G. HOFFMAN, former geologist with Midco Oil Corporation, has assumed the post of sales-geologist and service engineer with Geochemical Service Corporation, Tulsa.

A. R. THOMAS, 74, veteran in the petroleum industry of Pennsylvania and the upper Mid-Continent, died at his Tulsa home. After early participation in field development in eastern fields, Thomas moved to Chelsea, Oklahoma, where he was successively in charge of field activity and organizer of a drilling firm, The Rogers County Drilling Company. He resided in Tulsa since 1912.

Moderate Operations Help Inventory Situation

More economic operating conditions prevailed in the week ended July 6 as well as in the week before that.

Lower crude oil production and more moderate refinery runs have had favorable effects on inventories.

The wells of the country turned out 3,602,400 barrels of production daily in the week of July 6, according to the American Petroleum Institute, and were restricted, therefore, to only 26,000 barrels a day more than market demand for domestic crude, as estimated by the Bureau of Mines. The crude output was 37,150 barrels a day smaller than in the previous week. It was about 70,000 barrels, or 2 percent, greater than in the corresponding week last year.

Crude runs to stills came down for the second consecutive week, having averaged 3,575,000 barrels daily, which was 50,000 barrels less than in the week before. The runs were 3.5 percent above the daily average of 3,454,000 barrels for June and July of last year.

Production of gasoline came down, in reflection of the smaller runs to stills, having amounted to 11,469,000 barrels for the week of July 6, compared with 11,672,000 barrels the week before, a decrease of 203,000 barrels.

Stocks of finished and unfinished gasoline in the United States came down by the large amount of 1,867,000 barrels, having declined to 93,275,000 barrels. That quantity was 16.8 percent more than the 79,815,000 barrels held on the corresponding date last year, but indicated an improvement over the situation a few weeks ago, when the stocks were around 20 percent above the corresponding 1939 levels.

Storage of light fuel oil has continued to expand, as refiners have proceeded with the accumulation of supplies that will be needed next fall and winter. Having increased 1,140,000 barrels within the week, gas oil and distillate fuel stocks totaled 34,730,000 barrels on July 6, the American Petroleum Institute reported. That quantity was a little over 2,000,000 barrels, or 6.7 percent, above that of 32,547,000 barrels on hand a year previously. However, an acceleration of the build-up of stocks of the light fuel oils would be desirable, as there is danger of a repetition of last winter's experience, in which the industry had some difficulty in meeting the heavy requirements for heating oil.

Although stocks of residual fuel oil were increased 857,000 barrels in the week of July 6, to a total of 105,343,000 barrels, they were 7 percent smaller than a year before, when they amounted to 113,179,000 barrels. This large addition to storage contrasted with small fluctuations, up and down, in other recent weeks, and apparently reflected either a stepping up of refinery output of that product or a lagging of demand because of reduced shipping; for railroads and factories, other important consumers of the heavy oils, have continued briskly active.

Stocks of crude oil totaled 262,059,000 barrels on June 29, the Bureau of Mines reported. That was 3.5 percent less than the 271,567,000 barrels on hand a year previously.

Markets Generally Steady; Gasoline Demand Good

Although sharply curtailed export business is having an unfavorable effect on the oil industry's markets, psychologically as well as concretely, prices are being generally maintained, and no material changes are indicated for the immediate future.

Tending to offset concern over war-curtailed exports is the continued brisk domestic demand for most petroleum products. And especially encouraging have been the developments in the gasoline situation.

Despite the advance-buying prior to July 1 to avoid paying the extra ½ cent federal tax, gasoline subsequently has continued to move into the hands of consumers in exceptionally large volumes, the July 4 holiday having made heavy inroads into the accumulated stocks, with the result that brisk replacement buying has occurred.

Although current production at refineries was comparatively large, demand exceeded such output by exceptionally large amounts in both the week ended June 29 and that ended July 6, as evidenced by withdrawals of approximately 2,000,000 barrels from storage in each of the weeks.

Prices of gasoline, wholesale and retail, meanwhile have been quite steady, although they are at extremely low levels, in reflection of the seriously excessive inventories.

Despite the recent heavy withdrawals, the gasoline stocks are more than 13,000,000 barrels larger than a year ago, when a substantial excess was embodied in the inventory.

Crude Price Increased

While no important change occurred in the general crude market situation the past week, there was a 5-cent increase locally. Sohio Corporation, subsidiary of Standard Oil Company of Ohio and the largest purchaser of crude in the Illinois basin, announced a 5-cent increase for oil in the Wabash Valley area of Illinois and Indiana, from $1 to $1.05 a barrel, effective August 1. Pools affected were Keensburg, Illinois, and Griffin, Indiana.

The crude market in the Mid-Continent has been strengthened by the lowering of Texas allowables into strict conformity with market demand.

The outlook for the market for Pennsylvania-grade crude remains unfavorable, as demand for lubricants has shown no improvement. In fact, the lubricant market has continued on the decline, and in a buyers' market, prices have lost more ground. Some refiners declare that they are not interested in supplying lubricants at the low prices that are being offered, and that they will hold their supplies until prices improve. This situation, naturally, holds unfavorable implications for producers of Pennsylvania-grade crude, as it suggests that crude prices may be further reduced unless lubricant prices improve, despite the two recent cuts of 25 cents each.

California crude oil producers, like-

PRODUCT PRICES

REFINED GASOLINE	Range Last Week (Cents a gal.)	Late Week	Changes from week Before	
Oklahoma Refineries:				
60 Octane and under	4	4 ¼	...	...
63-66 Octane	4 ¼	4 ¾	...	...
72-74 Octane	4 ¾	5 ¼	...	...
Mid-Western Tank Car:				
60 Octane and under	4	4 ¼	...	...
63-66 Octane	4 ¾	4 ¾	...	...
72-74 Octane	4 ¾	5 ¼	...	...
New York Harbor:				
70 Octane and under	6	6 ¼	...	...
72-74 Octane	6	6 ¾	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	1 ½	1 ½	...	...
F.O.B. Breckenridge, Texas	1 ¼	1 ¼	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	3 ⅞	4 ¼	...	...
42-44 water white	4	4 ⅛	...	...
Mid-Western Tank Car:				
41-43 water white	3 ⅞	4 ¼	...	...
42-44 water white	4	4 ⅛	...	...
New York Harbor	5 ½	5 ½	...	...
RANGE OIL				
At Oklahoma Refineries	3 ⅝	3 ⅞	...	...
In Mid-Western Market, Group 3 basis	3 ¾	3 ⅞	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3 ⅝	3 ⅝	...	...
No. 3	3 ¼	3 ⅜	...	...
Mid-Western Tank Car:				
No. 1 straw	3 ½	3 ⅝	...	...
No. 3	3 ⅛	3 ⅜	...	...
New York Harbor:				
No. 1	5	5 ½	...	...
No. 3	4 ¾	4 ¾	...	...

HEAVY FUEL OILS (Per Barrel)	Range Last Week (Cents a gal.)	Late Week	Changes from week Before	
Oklahoma Refineries:				
No. 6	55	55	...	...
Mid-Western Tank Car:				
No. 5	75	75	...	...
No. 6	50	55	...	...
New York Harbor:				
No. 5	$1.55	$1.70	...	...
No. 6	1.35	1.35	...	...
BUNKER C FUEL OIL (Per barrel, ships bunkers)				
Gulf Coast	$ .80	$ .95	...	...
New York Harbor	1.35	1.35	...	...
DIESEL OIL (Per barrel, ships bunkers)				
Gulf Coast	$1.50	$1.70	...	...
New York Harbor	1.80	1 95	—.15	...
Los Angeles Basin, 27 gravity	1.20	1.40	+.05	...
LUBRICATING OIL				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	14 ½	18 ½	...	...
Neutral oil, pale, No. 3 color, 150 viscosity at 100°, 0-10 pour test	8 ½	10 ½	...	...
Western Pennsylvania:				
Bright stock, 145-166 viscosity, at 210°, 25 pour test	14	14	—1	—3
Neutral Oil, No. 3 color, 150 viscosity, at 70°, 25 pour test	19	19	...	...

wise, are concerned over the future of their market, although postings in that state were reduced earlier this year an average of 7 cents a barrel. For gasoline prices are seriously depressed in the Pacific Coast region, and there is danger that exports of California oils may diminish, because of the shutting off of shipments of Near Eastern oil through the Mediterranean to Europe. For such oil, in seeking a market, may move in the other direction, to Japan and China, in competition with oils from California and the Netherlands East Indies.

The markets for fuel oils have continued steady and probably will remain firm, as inventories of both light and heavy fuels are comparatively small in relation to prevailing consumption.

Illinois Drop Big Factor in Crude Production Decline

Influenced by a drop of 28,300 barrels in Illinois, United States crude oil production during the week ended July 13 declined 40,375 to 3,591,950 barrels, and 36,450 barrels under the figure set by the Bureau of Mines as proper for the period.

So many districts had small drops in output that the decline might be called general, with the notable exception of Texas with an increase of 4350 barrels and Oklahoma up 5175 barre's.

Texas remained well within allowable figures, while Oklahoma is above them. Illinois' decline leaves that state still far above what the bureau estimates is wanted there.

Details for the production decline are included in an accompanying table.

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937:						
August 28	[5]3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	[5]3,455,000	307,974,000	65,620,000	116,472,000	
1938:						
March 19	3,433,550	3,080,000	306,380,000	[5]93,192,000	122,067,000	
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	34,175,000	120,491,000
December 10	3,245,100	3,150,000	[6]269,509,000	68,687,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
June 24	3,452,800	3,430,000	272,297,000	81,733,000	30,239,000	111,726,000
July 29	3,539,100	3,460,000	268,513,000	77,887,000	34,900,000	114,053,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[9]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
September 30	3,658,200	3,560,000	233,023,000	71,168,000	38,081,000	115,466,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	39,562,000	114,786,000
November 25	3,818,100	3,510,000	231,811,000	75,595,000	38,527,000	112,106,000
December 30	3,545,000	3,445,000	237,742,000	80,985,000	34,184,000	106,680,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,100	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 1	3,651,650	3,651,350	261,662,000	100,353,000	29,533,000	104,768,000
June 22	3,846,450	[1]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 6	3,602,400	3,575,000	.....	93,275,000	34,730,000	105,343,000
July 6, 1939	3,529,800	[8]3,454,000	[4]271,567,000	79,815,000	32,547,000	113,179,000
Change in past year	+2.1%	+3.5%	—3.5%	+16.8%	+6.7%	—6.9%

[1] All time peak. [2] Peak for 1939. [3] Lowest since April, 1922. [4] Stocks, July 1, 1939.
[5] Peak prior to 1939. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California. [8] June-July, 1939 daily average. [9] Lowest since October, 1922, due to the shutdown of six Mid-Continent States.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand in July	State Allowable in July	BARRELS DAILY FOR WEEK ENDED July 6	BARRELS DAILY FOR WEEK ENDED July 13
TEXAS—				
Texas Panhandle	.....	.....	59,400	58,950
North Texas	.....	.....	84,100	83,700
West Central Texas	.....	.....	30,500	28,950
West Texas	.....	.....	176,950	178,800
East Central Texas	.....	.....	63,550	69,850
East Texas Field	.....	.....	372,800	374,600
South Texas	.....	.....	175,650	169,850
Texas Gulf Coast	.....	.....	173,200	175,800
Total Texas	1,339,400	1,236,740*	1,136,150	1,140,500
CALIFORNIA—				
Long Beach	.....	.....	44,600	44,200
Midway-Sunset	.....	.....	56,300	58,300
Kettleman Hills	.....	.....	44,700	44,700
Wilmington	.....	.....	85,100	85,500
Others	.....	.....	394,400	392,300
Total California	593,900	587,000†	625,100	625,000
OKLAHOMA—				
Oklahoma City	.....	.....	105,750	105,500
Seminole Area	.....	.....	110,400	110,300
Others	.....	.....	202,125	207,650
Total Oklahoma	403,900	408,100	418,275	423,450
ILLINOIS—				
Salem	.....	.....	224,500	211,200
Centralia	.....	.....	136,750	125,600
Louden	.....	.....	71,800	71,000
Other New Pools	.....	.....	83,750	81,500
Old Pools	.....	.....	9,700	9,900
Total Illinois	402,300	.....	527,500	499,200

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand in July	State Allowable in July	BARRELS DAILY FOR WEEK ENDED July 6	BARRELS DAILY FOR WEEK ENDED July 13
LOUISIANA—				
North Louisiana	.....	.....	68,375	65,950
South Louisiana	.....	.....	220,050	217,100
Total Louisiana	278,100	280,371	288,425	283,050
KANSAS	159,400	159,400	182,450	178,200
NEW MEXICO	106,100	106,100	105,900	105,500
EASTERN STATES—				
Pennsylvania Grade	47,900	.....	72,900	68,100
Others, Eastern	46,200	.....	19,500	19,800
Total Eastern States	94,100	.....	92,400	87,900
MOUNTAIN STATES—				
Wyoming	80,600	.....	80,300	76,250
Montana	18,100	.....	20,100	19,600
Colorado	4,800	.....	4,050	3,950
Total Mountain States	103,500	.....	104,450	99,800
MICHIGAN	61,600	54,000§	56,600	56,100
ARKANSAS	67,400	73,000	71,325	72,375
INDIANA	9,000	.....	13,100	13,500
MISSISSIPPI	9,700	.....	10,450	7,200
NEBRASKA	.....	.....	200	175
‡Total 8 Prorated States	3,009,800	2,992,971	2,884,225	2,884,175
Total United States	3,628,400	.....	3,632,325	3,591,950

* Net daily average, considering general shutdowns on July 4, 7, 10, 14, 18, 21, 28.
† Recommendation of Central Committee of California Oil Producers.
§ Department of Conservation estimate of actual production.
‡ Texas, California, Oklahoma, Louisiana, Kansas, Arkansas, Michigan, New Mexico.

Texas Curtailment Cuts U. S. Yield Despite Other Increases

Sharp reduction of crude output in Texas during May offset increases in other areas and brought daily average production for the month down to 3,815,600 barrels, it was announced July 11 by the United States Bureau of Mines.

The May average was 249,800 barrels above the figure for the same month last year, the bureau reported, but represented a drop of 52,600 barrels from the April level, and was 57,800 barrels below the all-time record of 3,873,400 barrels of March.

During the month, the report disclosed, Illinois attained a new peak at 446,300 barrels a day, and output in coastal Louisiana set a new record of 231,400 barrels. Increases also were recorded in Wyoming and Kansas, but all were more than offset by a drop in Texas output from 1,486,100 to 1,408,100 barrels, and small recessions in Oklahoma and Michigan.

The national output of crude oil in May was placed by the bureau at 118,283,000 barrels, compared with 116,045,000 barrels in April, the extra day offsetting the decline in daily average, and 110,541,000 barrels in May, 1939. Production for the first five months of the year reached 576,211,000 barrels, an increase of 57,427,000 barrels over the 518,784,000 barrels produced in the corresponding period last year.

Output of aviation gasoline was but 940,000 barrels, compared with 989,000 barrels in April, but domestic demand was only 455,000 barrels and exports 415,000 barrels, resulting in an increase of 70,000 barrels to stocks, which totaled 3,942,000 barrels at the close of the month. There was no indication in the report as to the production of 100-octane aviation gasoline, of which Dr. Robert E. Wilson, oil adviser to the National Defense Advisory Commission, said a few days earlier was a line in which production should be stepped up as part of the national defense program.

Daily average crude runs to stills were reported by the bureau as 41,000 barrels greater than in April. Crude imports increased even more materially, and despite the decline in crude production, stocks continued to increase, reaching a total of 261,839,000 barrels on May 31, a gain of almost 3,800,000 barrels during the month.

Gasoline Yield Lowered

Efforts by refiners to adjust operations to the relatively greater demand for fuel oils and the seasonal excess of gasoline stocks resulted in a gasoline yield of 42.3 percent in May and a distillate yield of 13 percent, compared with 44.4 and 11.7 percent, respectively, for the same month in 1939, the report showed.

"The domestic demand for motor fuel in May was 52,946,000 barrels, or almost 7 percent above a year ago; exports were only 1,992,000 barrels, or 55 percent below those of last May," the bureau commented. "This decline in exports reduced the increase in total motor fuel demand to less than 2 percent above May, 1939. In spite of the low gasoline yield, the large volume of crude run to stills, combined with the small gain in total motor fuel demand, has retarded progress in the seasonal liquidation of gasoline stocks. The total stocks of finished and unfinished gasoline amounted to 100,859,000 barrels on May 31, a decline of only 2,704,000 barrels during the month compared with a decrease of 3,331,000 in May, 1939. These stocks are about 16,660,000 barrels higher than a year ago.

"The demand for the lighter fuel oils continued at a relatively high seasonal rate. Compared to May, 1939, the total demand for residual fuels showed an increase of 2 percent, for distillate-fuels of 6 percent and for kerosene of 13 percent. Total stocks of distillate fuel oils amounted to 28,220,000 barrels on May 31, compared to 27,813,000 barrels at the same time last year."

Bureau of Labor Statistics figures placed the price index for petroleum products in May at 50.7, compared with 52.5 in May, 1939. The crude oil capacity represented in the report was 4,344,000 barrels, giving an operating ratio of 83 percent, compared with 82 percent in April and 83 percent in May, 1939.

Details of new supply and demand for the month, as compiled by the bureau, are shown in an accompanying table.

Bureau of Mines Report of Supply and Demand of All Oils

(Thousands of Barrels)

	May, 1940	April, 1940[1]	May, 1939	January–May 1940	January–May 1939
New Supply:					
Domestic production:					
Crude petroleum	118,283	116,045	110,541	576,211	518,784
Daily average	3,816	3,868	3,566	3,791	3,436
Natural gasoline	4,587	4,414	4,280	21,940	20,755
Benzol[2]	247	228	130	1,215	839
Total production	123,117	120,687	114,951	599,366	540,378
Daily average	3,972	4,023	3,708	3,943	3,579
Imports[3]:					
Crude petroleum in bond	176	128	494	590	1,831
Crude petroleum for domestic use	3,921	3,041	3,434	13,864	10,125
Refined products in bond	[4]1,403	1,089	2,130	7,174	7,517
Refined products for domestic use	[5]934	1,948	529	10,344	2,690
Total new supply, all oils	129,551	126,893	121,538	631,338	562,541
Daily average	4,179	4,230	3,921	4,154	3,725
Increase in stocks, all oils	8,361	11,590	1,156	39,024	1,922
Demand:					
Total demand	121,190	115,303	120,382	592,314	560,619
Daily average	3,909	3,843	3,883	3,897	3,713
Exports[3]:					
Crude petroleum	4,886	4,262	8,643	20,723	29,118
Refined products	[6]7,541	7,585	12,128	35,200	48,049
Domestic demand:					
Motor fuel	52,946	47,683	49,547	223,163	208,406
Kerosene	5,297	5,621	4,368	31,096	26,492
Gas oil and distillate fuels	10,059	12,210	7,523	79,480	64,032
Residual fuel oils	26,017	26,526	25,047	142,388	131,987
Lubricants	2,063	2,138	2,132	9,660	9,151
Wax	86	106	102	447	398
Coke	557	364	587	2,838	2,762
Asphalt	2,564	1,661	2,714	7,232	7,717
Road oil	611	190	695	1,112	1,543
Still gas	6,479	5,943	5,798	29,419	26,270
Miscellaneous	139	156	214	693	908
Losses	1,945	858	884	8,863	3,786
Total domestic demand	108,763	103,456	99,611	536,391	483,452
Daily average	3,508	3,449	3,213	3,529	3,202
Stocks:					
Crude petroleum:					
Refinable in United States	261,839	258,066	278,087	261,839	278,087
Heavy in California	13,265	13,516	14,492	13,265	14,492
Natural gasoline	6,514	6,112	6,212	6,514	6,212
Refined products	282,176	277,739	270,177	282,176	270,177
Total, all oils	563,794	555,433	568,968	563,794	568,968
Days' supply	144	145	147	145	153

[1] Revised. [2] From Coal Economics Division. [3] Imports of crude as reported to Bureau of Mines; all other imports and exports from Bureau of Foreign and Domestic Commerce. [4] Exclusive of 126,000 barrels imported into non-contiguous territories from outside the United States. [5] Exclusive of 77,000 barrels into territories. [6] Exclusive of 14,000 barrels exported from non-contiguous territories, but inclusive of 638,000 barrels shipped from United States to territories.

Natural Gasoline Stocks Again Increased in May

Natural gasoline production in May averaged 6,215,000 gallons daily and totaled 192,654,000 gallons for the month against 185,388,000 gallons in April, according to the monthly report of the Bureau of Mines.

The chief increases, bureau officials said, were recorded in the Rocky Mountain, Louisiana, Panhandle and Osage districts.

Stocks again increased, it was reported, supplies at plants and terminals increasing from 144,018,000 to 152,670,000 gallons during the month and stocks at refineries jumping from 112,686,000 to 120,918,000 gallons.

Texas Permits

The Texas Railroad Commission last week issued permits for drilling 192 wells, 149 more than were allowed the week before.

Ten permits were granted in the East Texas field, with seven in Gregg, one in Cherokee, one in Rusk and one in Upshur County. From the remainder of the East Central Texas area, four locations were listed.

Southwest Texas led the state with 63 permits, including 10 in Jackson County, while Gulf Coast operators reported 12 locations. There were 24 permits authorized in West Texas and 22 in West Central Texas.

Permission to drill 42 wells in North Texas was approved, including 14 in Archer and 13 in Wichita County. Panhandle operators were allowed to drill 15 wells.

WORLD-WIDE DEVELOPMENTS

By WM. V. GROSS, Associate Editor

War

German Airplane Engine Not Choosey About Gasoline

Study of the fueling system of a German Heinkel III type bomber shot down in Scotland by British pursuit planes reveals that the engine can be operated on various types of fuel and does not necessarily have to depend on high-octane gasoline commonly used in airplanes in the United States and elsewhere.

Charles Berthelot, who made the study, said the motor was equipped with a system for injecting the fuel directly into the cylinders, analagous to the feed pump of the Diesel motor, and that need for the carburetor thus was eliminated. The Heinkel III fuel system also would eliminate frosting at great altitudes, something that has been known to cause trouble in other fuel systems.

However, the Heinkels use good aviation gasoline when they can obtain it.

The bomber studied by Berthelot was partially filled with 87-octane gasoline having 3.77 cubic centimeters of tetraethyl lead per U. S. gallon.

Talk Transfer of British Properties to Soviet

Transfer of British oil interests in Rumania, representing approximately $100,000,000 in British capital, to Soviet Russia was discussed in Bucharest last week. The move, it was believed in some quarters, would be more desirable than the possibility of having the properties fall into the hands of Germany. The Rumanian government has placed an armed guard around offices of foreign oil companies to prevent removal of records.

Iraq Oil Reported Diverted to Haifa

Dispatches from Istanbul last week declared that Mosul Oil Fields, Ltd., and the government of Iraq have agreed to divert to Haifa oil which previously had been sent by pipe line to Tripoli, Syria, French possession.

Germany Gets Small Local Production in French Fields

The conquering of France and that country's newest field near St. Gaudens did little to ease Germany's deficiency in the matter of petroleum supplies. So far as known, the largest initial yield recorded at St. Gaudens was 63 barrels, but the oil was reported to have had a gasoline content of 22 percent.

St. Gaudens' oil-producing horizon is found at 7544 feet, but there is a gas zone at 5022 feet.

France's only other field is Pechelbronn, where most of the production is obtained by mining. St. Gaudens and Pechelbronn put together still leave France in the position of having to import more than 9 barrels out of every 10 used.

With the exception possibly of Poland, Germany's acquisitions have left the country in a worse dilemma from the standpoint of fuel requirements than she was before the start of hostilities.

Rumania Committed to Send Italy 3,223,000 Barrels of Oil

Rumania, according to the Revista Italiana del Petrolio, is committed to supply Italy during 1940 the following amounts of petroleum products: crude, 59,000 barrels; gasoline, 813,000 barrels; kerosene, 477,000 barrels; gas oil, 960,000 barrels; fuel oil, 833,000 barrels, and lubricants, 81,000 barrels. This makes a total of 3,223,000 barrels, or about 7 percent of Rumania's total production.

Recent inferences that Italy is attempting to arrange with Japanese interests to deliver certain petroleum requirements to the East Coast of Africa might indicate that some source of Italian supply, possibly Rumania, is not able to make deliveries in accordance with current or anticipated needs.

Denmark Had Nominal Oil Supplies When Overrun

According to a statement issued by the British minister of economy, petroleum stocks on hand in Denmark at time of invasion by Nazi forces were only 1,400,000 barrels at most, or about 3½ months supply at the pre-war rate of consumption. The stocks of gasoline did not exceed 765,000 barrels, or about 4 months supply, and the stocks of heavy oils amounted to 427,000 barrels, or about 2½ months supply, he is quoted as saying.

Japan

Charcoal Shortage Further Complicates Fuel Situation

In the recent shortage of charcoal, a fuel used in many instances to generate gas for operation of some types of motor vehicles in Japan, some quarters see another straw weakening the back of what little opposition is voiced in Japan to a more aggressive policy with reference to the Netherlands Indies.

Many people were talked into installing the charcoal generators on buses, trucks and cars in Japan in order to make more gasoline available to the army in China. With the shortage of charcoal and the generally unsatisfactory performance of vehicles equipped with the wood-burning gas generators, the demand for petroleum gasoline has become more acute, and the nearest appreciable source of supply, outside of Sakhalin, is the East Indies.

Shimizu Institute in Tokyo is said to be experimenting with vegetable and fish-oil substitutes for gasoline. There have been several stories to the effect that the Chunking government has had considerable success with this latter type of fuel.

Details on current rationing of gasoline in Japan are not available, but in May the following maximum monthly allowances were in effect: private cars, 9 gallons; trucks, 100 gallons; taxis, 60 gallons; ordinary buses, 75 gallons; sight-seeing buses, 15 gallons; hired cars, 36 gallons.

Mexico

Refineries Not Able to Supply Sufficient Anti-Knock Fuel

Notwithstanding the recent declaration by Petroleos Mexicanos that it was in a position to furnish the Mexican market with sufficient high-octane, anti-knock gasoline through construction of a new plant for producing same, it is noted that a recent Diario Oficial, government bulletin, granted Distribuidora de Petroleos Mexicanos, the distributing organization in Mexico, permission to export crude petroleum and gasoline for refining abroad. It was stated simply that issuance of the authorization was due to a desire to obtain a higher-octane content gasoline than that produced in Mexico.

Egypt

Egyptian Locomotives Turn to Oil With Coal Shortage

Contemplated conversoin of Egyptian locomotives from coal burners to oil burners will add appreciably to consumption of petroleum in that country.

Tarraf Aly Bey, director general of the Egyptian State Railways, recently was quoted in Al Ahram, an Arabic daily, as explaining that the railways in Egypt have been encountering difficulty in obtaining coal supplies from abroad. Installation of oil-burning equipment would allow the railways to use locally produced fuel oil from Hurghada and Ras Gharib fields.

Burmah Oil Company Earnings Drop Slightly

Burmah Oil Company has reported a profit of £1,928,328 for its wholly-owned subsidiaries operating in Burma and India during 1939, compared with £2,149,533 the previous year.

Dividends and other income totaled £2,386,033, against £2,658,341, providing a total income of £4,314,361 against £4,807,874. Distribution was maintained at 21 percent.

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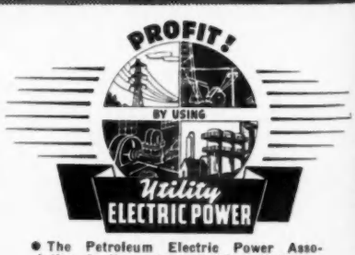


● The Petroleum Electric Power Association is the outgrowth of a desire on the part of electric power companies to render greater service, through cooperative effort, to the Petroleum Industry.

PETROLEUM ELECTRIC POWER ASSOCIATION

U. S. FIELD OPERATIONS

Illinois

Meisner Sand To Be Tested In Bond County Wildcat

Most closely watched test in Illinois was National Petroleum Company's Spindler Investment Company 1, Bond County, NW NW NW 10-6n-2w, which was preparing to drill plug to test 22 feet of Meisner-sand saturation at 2295-2317 feet. With an elevation of 598 feet, the test found the Golconda at 792 feet, Cypress at 871 feet, Cypress sand at 915 feet, Paint Creek at 942 feet, Benoist at 1009-38 feet, Aux Vases at 1059 feet, St. Genevieve at 1097 feet, Chattanooga at 2256 feet, Meisner sand at 2298 feet and Devonian at 2330 feet. The Glen Dean, one of the common markers for wells in the basin, was missing. Casing was cemented to 2451 feet and total depth was 2454 feet. Drillable sections were set opposite the Meisner, and also opposite an 18-foot show in the Benoist.

Due south of the Spindler test, Swan-King's Brown 1, NW SE SW 22-6n-2w, was coring the Devonian but had found no shows.

A wildcat a mile north of production in the new Irvington field of Washington County, North American Oil Company's L. & M. Baldwin 1, SW NE 14-1n-1w, was drilling at 1400 feet, running 75 feet lower than wells in the Benoist-sand field a mile south. Gulf Refining Company's third completion in the field, Buhl 3, SE SE SW 23-2s-1w, pumped 160 barrels of oil and 35 barrels of water in 22 hours after a plugback from 1554 to 1550 feet. The company's Buhl 4, first Devonian test in the pool, just south of the discovery, NW SE SW 23-1s-1w, was drilling at 2300 feet. Shell Oil Company's Brown 1, SW 23-1s-1w, pumped 160 barrels of oil and a quantity of water in its best 24-hour test from 1549 feet. The east outpost, Williams et al's Illinois Central 1, SE 23-1s-1w, was attempting to shut out water in the Benoist. It had been plugged back from 1595 to 1592 feet, and had top of Benoist at 1583 feet.

Superior Oil Company's Camilla Green 1, SW 19-2s-11e, first Devonian test in the Albion field of Edwards County, was abandoned at 5185 feet. An Edwards County wildcat, near Grayville, Hersebach Petroleum Corporation's Perkins 1, NE SW SW 2-3s-10e, has been plugged back for a drill-stem test in Biehl sand at 1962-80 feet after drilling through a dry McClosky to 3275 feet.

West outpost to the Lake Centralia-Salem pool of Marion County, Picard & McGuire's West Estate 1, NE NE SE 35-2n-1e, was abandoned at 3620 feet after no commercial shows were found in Devonian lime, topped at 3550.

In Wayne County Pure Oil Company's pool-opening Robert Macklin 1, E½ NW NW 1-1n-7e, Bedford township, 2 miles from production, flowed an estimated 800 barrels in 24 hours after an acid treatment in the McClosky.

As production in the Centralia pool of Clinton and Marion counties slumped for the first time in many months, several outpost tests to the field were abandoned as dry. Abandonments included T. W. Lee's Hoffman 2, C NW NE NE 35-2n-1w, which topped Devonian at 2874 feet; Thompson Drilling Company's Lippert 2, NE NE NE 35-2n-1w, topped Devonian at 2878 feet; McKee's Lippert 1, SW 26-2n-1w, total depth 2990 feet; Magnolia Petroleum Company's Wollenwebber 1, SW 25-2n-1w, at 2948 feet, and E. Frank Jones' Leon Lippert 1, CS½ SE SE 27-2n-1w, at 2970.

Best completion of the week in the field and in Illinois was Adams Oil & Gas Company's Copple 19, SE 35-2n-1w, which flowed 8500 barrels in 24 hours from Devonian after an acid treatment.

A Jefferson County wildcat, Roger C. Young's Whittington 1, SE SE SW 30-4s-3e, Spring Garden township near Ina, plugged back from 3400 to 2648 feet and cemented casing at 2645 feet to test 14 feet of Bethel saturation.

Five miles northwest of Breese, St. Rose township, Clinton County, W. S. Tatum's Schrage 1, C NE NE SW 17-3n-4w, was a probable abandonment at about 3500 feet in St. Peter sand. It topped Benoist at 945 feet, Devonian at 2144 feet and Trenton at 2962 feet. Another wildcat in the County, C. T. Poland's Wilkins 1, NE SW SE 10-2n-3w, a mile northwest of Beckemeyer, was dry at 2594 feet.

Indiana

Start Devonian Test in Alfordsville Gas Field

Newton Pipeline Company has spudded John Dorsam 1, NW SW SE 35-2n-5w, a mile east of Alfordsville, Reeve Township, Daviess County, in the heart of the old Alfordsville gas field, for a Devonian test.

In Harrison Township, Daviess County, ½-mile south of Glendale, D. N. Norris' John W. Connelly 1, SE NE 33-2n-6w, was drilling in Devonian at 2200 feet. Topped at 2180 feet, the formation had a 500,000-cubic-foot gas show at 2186 feet.

In Veale Township, Daviess County, Fred L. Hartman's Edith White 1, NW SW 22-2n-7w, inactive for several months at 1540 feet, will be deepened to the Devonian.

A 2-year-old Pike County wildcat stirred hopes of Trenton limestone production as George Miller's Robert Nixon 1, NE NW SE 14-3s-8w, reportedly had a show of oil at about 4500 feet. Now shut down, it has been Indiana's mystery test since spudded in 1938.

South of Griffin field production ½-mile, Continental Oil Company had derrick up for Mumford Realty Company 1, NW NW NE 25-3s-14w.

About 50 miles southeast of Chicago, R. H. Smith's R. Yacuk 1, SW SE SE 33-32n-8w, wildcat, was estimated an 8-barrel pumper from Trenton at 880 feet.

Gulf Refining Company's H. G. Dickhaut 1, SW NW SW 5-6s-12w, southwest Robinson Township, Posey County, swabbed 77 barrels in 24 hours, natural, to open a new pool in the Cypress-sand at 2401 feet. It will be shot.

Abandoned was a Perry County wildcat in Tell City, Louis Stamp's Emma Huck 1, NE Block 382, 6s-3w, at 742 feet.

Southeast of Rockport field production 3½ miles, Spencer County, W. L. McPherson located Ross Nichols 1, NW NW 10-8s-6w.

In the Hatfield section of Spencer County, Shell Oil Company's W. Bretz 1, SE NW SW 3-7s-6w, was abandoned at 1035 feet, through a dry Waltersburg sand.

East of Griffin field production, Gibson County, Morgan H. Brown-Bates & Lichlyter's E. M. Sullivan 1, SE NW SW 20-3s-13w, was bottomed at 2950 feet, through a dry McClosky, waiting on orders to set pipe to a Cypress show.

Kentucky

Two Wildcats Included Among New Starts

In Christian County, 4 miles southwest of Kirkmansville, F. C. Thomas was spudding Worsham 1, a wildcat several miles from production. Another new wildcat start was W. G. Obin's Harrison 1, northeast of Narrows pool production in Ohio County.

In Breckenridge County, 3 miles west of oil production in the Glen Dean pool, H. E. Morgan et al's Ora Burton 2, was a 200,000-cubic-foot gasser in the Jackson sand. The test, bottomed at 520 feet, was shut down for orders.

In the Pattyville pool, Ohio County, Eureka Oil Company's Davidson 6, was abandoned through Jett sand.

In the Oaks pool, Ohio County, Sohio Producing Company's Sally Bedell 14 was rated a 10-barrel Jett-sand producer at 330 feet.

In the Island pool, McLean County, J. A. Barrett was rigging up Smeathers 1.

In the Oklahoma pool, Ohio County, O. D. Vickers' Greer 5, was an estimated 10-barrel completion in the Jett sand.

Tennessee Clay County Test Installs Pump

A. F. Engel et al's Cordell Hull 1, 3 miles north of Celina on Pine Branch, Clay County, was installing electric bottom-hole pump to test oil shows below 1100 feet. It had shows at 1167-74 feet, at 1198-1201 feet, and flowed oil and salt water for 30 minutes from 1258-61 feet. The wildcat topped Knox dolomite at 1163 feet. J. H. Overstreet is contractor.

Kansas

Russell County Wildcat Finaled for 559 Barrels

Kansas operators proved one new lime pool, extended two others and had a wildcat showing as another potential opener.

Jones Brothers Drilling Company's Mahoney 1, CSL SW SW 18-14-12w, east-central Russell County, rated a potential of 559 barrels from Lansing-Kansas City lime at 2985 feet after acid treatment. The pool has been termed Bunker Hill South. It is somewhat northeast of the major Uplift trend, although still on its control.

Feltes pool of northeast Barton County received an extension at Deering J. Marshall, Inc.'s Weber 3, NW SE 4-16-12w, as hole partially filled with free oil from Arbuckle lime below 3378 feet.

A showing indicative of another extension was obtained in Stanolind Oil & Gas Company's Ahnert 1, SE NE 10-22-12w, south of South Sittner pool, Stafford County, which has saturated Arbuckle through the upper few feet and was to test.

A Phillips County wildcat, Cities Service Oil Company's Ray 1, NE NW SE 32-5s-20w, was shut down after a reported good show in the top of Arbuckle lime. No tests had been made and operator was running casing. The test encountered the lime at 3599 feet and drilled one foot into the pay. Additional acreage was being taken by the company to strengthen the block.

An unusually good producer was showing in the Stoltenberg area where T. C. Palmer et al's Stoltenberg 1-B, CS½ 27-16-10w, western Ellsworth County, filled 2500 feet in 4 hours. No treatment had been given the Arbuckle pay.

In the southern part of the state, W. M. McKnab's Lambert 1, CWL NW SE 11-34-4e, Cowley County, recently taken over by Walter Fees, will be completed as a gasser. A number of gas pays were drilled, the best showing for 4,000,000 cubic feet from 3082 feet. The new owner contemplates drilling additional wells in the area.

Anschutz & Haynes' Driscoll 1, CNL SE SW 30-15-11w, Russell County wildcat, was completed for 646½ barrels of oil natural from Arbuckle lime.

The state's most closely watched wildcat, Stanolind Oil & Gas Company's Judd 1, CSE SE 15-21-38w, Kearney County, Western Kansas, was drilling below 4650 feet. The test is about 30 miles east of the Colorado state line in an area removed from any other Kansas production. The test is given a chance in Mississippi lime, Kansas City-Lansing, Viola, Wilcox or Simpson sands, and Arbuckle.

Oklahoma

Seminole County Wildcat Shows Well on Drill-Stem Test

Mid-Continent Petroleum Corporation's Ferguson 1, NE SW SW 18-7n-8e, west of Fish pool, made 15 barrels per hour on drill-stem test from Wapanucka lime at 3475 feet with 2,500,000 cubic feet of gas to open a new Seminole County pool. As with many pools in this area, the producing acreage may be confined to a portion of one section.

Pure Oil Company's Quintin Little-B, NE SW SE 28-5s-7e, a southwest diagonal offset to the Cumberland pool discovery, Marshall County, had saturated Bromide and a 15-minute drill-stem test showed about one barrel per minute. It was drilling through sandy lime and shale below 4980 feet. The same firm's Thomas-A, SW NE NW 28-5s-7e, was below 4700 feet and Emma Crissman 1, NE 29-5s-7e, was in surface beds. Across the line in Bryan County, the company's Park College was at 3663 feet in lime, and Stewart A, SW SE NE 28-5s-7e, was drilling below 4300 feet.

Continental Oil Company's Remund 1, SEC NE 24-14-4w, northwest of Edmond pool, Oklahoma County, was drilling below 5200 feet for a test.

A Cromwell-sand pool was indicated between North Cromwell and Dill pools, Okfuskee County. Reese Drilling Company's Berryman 1, NEC 36-11-8e, cored Cromwell sand at 3470-76 feet and recovered saturation and some live oil. An electric log was run, and casing was being put down for a test. Location is on a farmout from The Texas Company. North Cromwell field opened prolific production from the sand and brought about a renewal of interest in the shallow formations of the area.

West King Extended

West King pool, Pottawatomie County, received an extension at Butcher's Taylor 1, SE NE NE 35-10-4e, which produced at the rate of 23 barrels per hour on 19-hour tests through ¼-inch choke with casing perforated. Hunton lime topped at 4232 feet, was drilled to 4250 feet where it went into Sylvan shale. Five-inch casing was spotted below the shale at 4275 feet. The test was treated with 2000 gallons of acid.

The Texas Company's Okfuskee County wildcat, Cowan 1, SW SW SW 5-11-10, was drilling at 3710 feet for the second Wilcox. The test encountered fair shows in the Gilcrease sand, and will probably test the formation if nothing is developed in the second Wilcox. The first Wilcox was tight and dry.

Hobart pool, in Kiowa County, had a north edge producer at Argo Oil Company's Ratliff 1, SE NE NE 19-7n-17w, drilled to 917 feet in lime where it sprayed oil with an estimated 20,000,000 cubic feet of gas. The well was ordered shut in. It is 2000 feet north of production and may either indicate a continuation of the Hobart trend, or a new spot associated with the same feature.

Helmerick & Payne and Blackwell Oil & Gas Company were moving in tools at Fire Shaker 1, SEC NE 11-24-3e, Noble County, to deepen from 4080 feet. In the Yale sector of Payne County, where survey parties have been active during the past two years, Burke-Greis Oil Corporation, Zephyr Drilling Company and Deep Rock Oil Corporation's O'Keefe 1, CWL E½ NW 26-19-5e, was drilling below 3705 feet toward the second Wilcox after finding the upper section, topped at 3688 feet, white and dry.

Forest City Basin

Two Nebraska Tests Report Hunton Lime Shows

Two new pools were indicated for the Hunton lime, both some distance from the original discovery. Pawnee Royalty Company's Boice 1, Richardson County.

About 12 miles north of Nebraska's first well, a Hunton-lime core at 2433-43 feet had good saturation in Indian Territory Illuminating Oil Company's Schaible-Kuttle 1, CNE SW 29-3n-16e, southeast of Shubert, Richardson County. Casing was being run to test.

Uhri Oil Company's Ogle 1, NE SE SE 9-1n-14e, barely north of the state line in Richardson County and 10 miles west of Falls City pool, failed to show favorably when Hunton lime was drilled. Only a show of oil on top of 400 feet of water was obtained. Late reports from the field, unconfirmed, credit the well with an estimated 100 barrels per day following acid treatment of the formation. The test found top of the Hunton at 2255 feet and drilled to 2260 feet. Operators reported Misener sand drilled with a slight show of oil. The formation may be another objective strata for wildcat effort.

In the Falls City area, three tests were being drilled that may add materially to the prospective picture of the sector. They are Pawnee Royalty Company's Zentner 1, CNE SE 8-1n-16e, 1 mile northeast of Boice 1; the same firm's Keim 1, CNE SE 18-1n-16e, and Campbell-Sparks Horton 1, CNE NW 5-1-15e, northwest of Falls City pool.

A test in Douglas County, Northeast Kansas, Forrester et al's Altenbernd 1, CSL NW 35-12-20e, 5 miles east of Lawrence, was deepening after finding 2 barrels of heavy oil at 720 feet. It is in an area gone over by seismograph parties within the past 18 months. Possible pays are Hunton lime, Squirrel and Bartlesville sands, and breaks in the Mississippi lime. Missouri tests, now limited to two wells in the basin, were drilling with no encouraging shows.

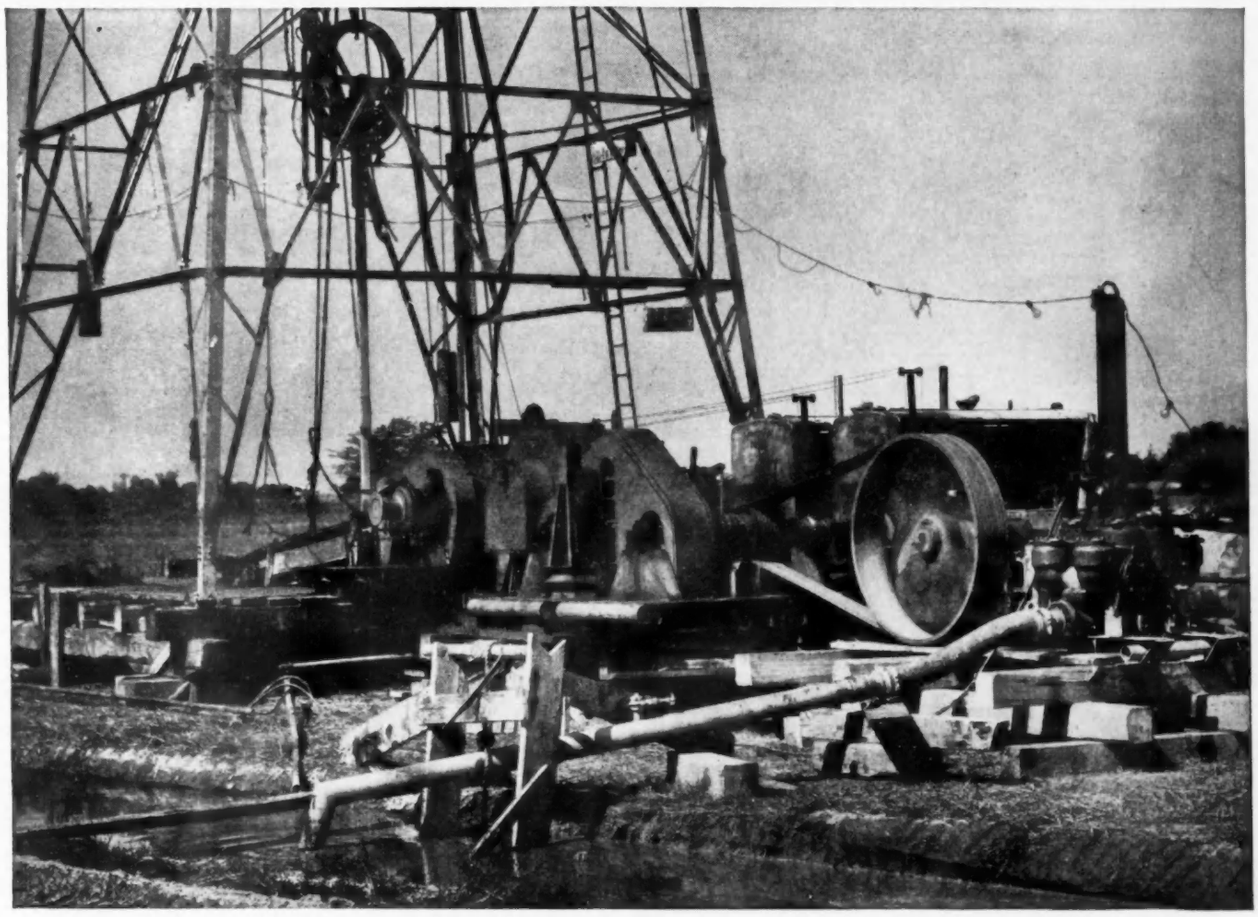
Willacy County Wildcat Is Cooperative Affair

Rig was being moved in for a 10,000-foot test six miles southeast of Willamar on a geophysical prospect in Willacy County following a farmout deal from Shell Oil Company and Standard Oil Company of Texas to Pan American Production Corporation. The latter company in turn awarded the drilling contract to Trinity Drillers, Inc.

The wildcat will be Garcia 1, Share 13, San Juan de Carricitos Grant.

Humble Oil & Refining Company and Sun Oil Company, with holdings in the vicinity, are supporting the operation.

LIGHTENING THE LOAD



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HYATT

ROLLER BEARINGS

QUIET

West Texas

Failures Indicate Small Area For Soma Shallow Production

Failures to the south and west of the Soma shallow pool, western Crockett County, tends to localize the producing area. Two of the trio of completed producers have an excellent gas/oil ratio to provide further complications for the operators who paid heavy bonuses for leases when the discovery blew in last April. Mudge Oil Company's Noelke 1, north offset to production, logged first show in the Yates at 1134 feet and at 1144 feet cleaned itself with a head of oil and gas. Gas predominated when the well was shut in. Tubing packers may be installed to try and curb the gas flow. The discovery has remained shut in since mid-June because of excessive gas, while Lewis, Graham & Shannon's Noelke 1, east offset, missed the gas and made a small flowing well at 1064-1100 feet.

Moore Exploration Company and Olson Oil Company's Noelke State 1, half mile south of the discovery, was abandoned in anhydrite at 1518 feet, having checked low on the Yates marker. Henry Schooler et al's Noelke 1, half mile west of the discovery, passed up small gas and oil shows in Yates, topped at 835 feet with an elevation of 2351 feet, and was drilling at 1440 feet. Gregory, McCandless and Superior Oil Corporation's Shannon 1, 3½ miles east by north of the pool, missed the Yates pay, and was drilling at 1685 feet.

The Crinoidal lime horizon in the Todd pool, Crockett County, recorded third prolific well when Continental Oil Company et al's Todd 4-B, ¼ mile south of the discovery, flowed 580 barrels of 41-gravity oil natural in 4 hours through 2-inch outlet on 7-inch pipe. Gas/oil ratio averaged 517/1. Production is from saturation at 5755-5795 feet. Top of Crinoidal, basal Pennsylvanian, was logged at 5686 feet, with nominal saturation in the upper section. On the Crinoidal marker it is 98 feet lower subsea than the first producer and about flat with the second completion.

Search for Ordovician production on a strike between the Sand Hills field, Crane County, and the Apco pool, Pecos County, is to be renewed through the starting of Taubert, McKee & Siemoniet's V. W. Crockett 1, SWc Lot 4, Section 4½, Block 3, H&TC and J. B. Brown Survey, northern Pecos County. Location is 1¼ miles south of Magnolia Petroleum Company and Tex-Mex Petroleum Corporation's McKee 1-A, which produced a small volume of oil and gas from Simpson, and quit in Ellenburger at 6102-6267 feet. Nearby lease owners contributed cash and acreage toward the test, as lease on a number of tracts will expire late this year. Plymouth Oil Company's Levy 1, northwestern Pecos County Ordovician project, was drilling lime at 5340 feet.

Gulf Oil Corporation's Wristen 5, Shipley pool, Ward County, is the deepest active test in the district, and was drilling lime at 8512 feet in the upper Ordovician.

Southeastern Cochran County proved capable of supporting additional development south of the main trend of production between the Duggan and Slaughter fields when The Texas Company's Mallet 1-F, SWc Labor 25, League 55, Scurry County School Lands, swabbed and flowed 113 barrels of oil, averaging 4.6 percent b.s., in 11½ hours. This test followed use of 2000 gallons of acid in pay at 5006-59 feet, with an elevation of 3627 feet. The well was reacidized with 5000 gallons late last week to try for a steady flow.

Proration gauge given Helmerich & Payne and Atlantic Refining Company's University 1, C NE NE Section 11, Block 11, Andrews County wildcat, placed the initial at 168 barrels of 37.6-gravity oil and 10 barrels of water on pump. Broken saturation at 4260-4475 feet was given nitro shot and treated with acid. Atlantic Refining Company's University 1-2, north offset, swabbed 70 barrels of oil the first 24 hours and 18½ barrels the next 19 hours after nitro shot at 4250-4500 feet, and the company's University 1-23, 2 miles south, swabbed 180 barrels initial after nitro shot and acid at 4250-4470 feet.

Plymouth Oil Company and Amerada Petroleum Corporation's Brownfield 1, eastern Yoakum County wildcat, abandoned in sulphur water at 5750-5769 feet. Grady Vaughn and High Point Oil Company's Smith 1, northwest outpost for the Wasson field, failed to indicate commercial production after acidizing at 5227 feet, or 16-1 feet subsea, and will be reacidized.

Stanolind Oil & Gas Company's Johnson 1-D, NE SW NW T&P Section 27, Block 43, key well in determining if the Foster-Johnson and North Cowden producing areas are to be joined, bailed 2 barrels oil and 3 barrels water daily at 4250 feet. Unless the water decreases it is not expected to make a commercial pumper after the usual nitro shot.

Hall County Wildcat Has 600 Feet of Structural Relief

Humble Oil & Refining Company's Allie Weaver 1, near NEc SE NE S. P. Ry., Section 51, Block 1, Hall County wildcat, was classed as the most important prospect underway in the Texas Panhandle on registering about 600 feet of structural relief on Permian markers in drilling below 3160 feet on a 7500-foot contract. It is about 13 miles northeast of Phillips Petroleum Company's Hughes 1, which logged show of gas at 4955-60 feet and a trace of oil at 5421-22 feet in the Canyon. The latter entered the Strawn at 5860 feet, followed by Mississippian at 7035-7865 feet, and quit in Ellenburger at 8016 feet. Rio Bravo Oil Company's Hughes 1, abandoned in 1929 at 5232 feet, provides additional subsurface control on the general area on the Permian and upper Pennsylvanian, and is slightly higher on structure than the deep failure.

North Texas

Bend Lime Has Renewed Interest With Clay County Test

An Eastern Clay County wildcat injected renewed interest in Bend lime prospecting along the Bonita-Nocona-Ringgold trend on showing for a natural flowing well through formation tester used on 12 feet of pay bottomed at 5984 feet. Several recent deep failures and disappointing showings by other prospects underway along the district's deepest producing belt threatened to cause cancellation of pending projects. The new strike is down-dip on the southwest flank of the Worsham structure, and lends support to the theory that Bend production will prevail around the rim of the large uplift.

Completion of a producer was virtually assured when E. C. Norwood, Glen Grimes and King Oil Company's Hapgood 1, SWc Block 61, Marion County School Lands, logged top of conglomerate saturation at 5972 feet, and kicked off promptly through drill-stem test at 5973-84 feet. The tool was open 10 minutes. Gas blow appeared within a minute, and oil spray followed in 6 minutes, then continued for 12 minutes after closing the tool. Bottom-hole pressure was calculated at 2750 pounds. Seven-inch pipe was cemented last mid-week at 5972 feet. Hapgood 1 proved dry in the Canyon and Strawn series, and logged top of Bend at 5901 feet, being 261 feet lower subsea than W. B. Omohundro et al's Seay 1, discovery well of the Ringgold pool, situated in western Montague County and 5½ miles east by north. The difference in subsea total depth is 282 feet. Nearest production to Hapgood 1 involves 3400- and 3900-foot Strawn oil on the Worsham ranch, 3 miles east by south. Walter Gant et al's Edwards 1, 4½ miles northwest of Hapgood 1, yielded a small amount of oil with water when swabbed after acidizing through perforations opposite saturation in Bend, topped at 5780 feet. It plugged back from Ellenburger at 5990-6354 feet to 5915 feet.

John E. Farrell et al's Malone 1, 5½ miles west by north of the Hapgood strike, was drilling at 6400 feet, having logged top of Bend at 6006 feet, or 94 feet low subsea. Wirt Franklin and W. B. Omohundro's Staggs 1, 6 miles north of Henrietta, was abandoned in Ellenburger at 6645-6769 feet. Formation tester was used several times with negative results in the Bend series, topped at 5872 feet. Near the south line of Clay County, L. O. McMillan et al's Watson 1 was drilling at 2580 feet, and Deep Rock Oil Corporation's Dycus 1 was drilling lower Strawn shale at 4850 feet.

An oil strike from the Strawn series in the Fort Worth syncline appeared

promising late last week when the southwestern Montague County wildcat of Walter H. Gant et al on the Will Laird tract, R. T. Millard Survey A-470, 6 miles southwest of Sunset, logged 13 feet of saturation. Top of pay was called at 4857 feet and penetrated 4 feet with rotary. Core pulled at 4861-70 feet registered full recovery, and is credited with carrying oil saturation. Formation tester used at 4855-71 feet recovered 10 feet of high-gravity oil and 155 feet of oil-cut mud with no water. Coring was resumed with the next 7 feet also showing oil saturation. Casing may be run to try for a completion, although Laird 1 was scheduled to be carried to 7000 feet, or to the water level in the Ellenburger. An oil producer would place greater emphasis on the deep production possibilities of the syncline, which received a major lease play last spring.

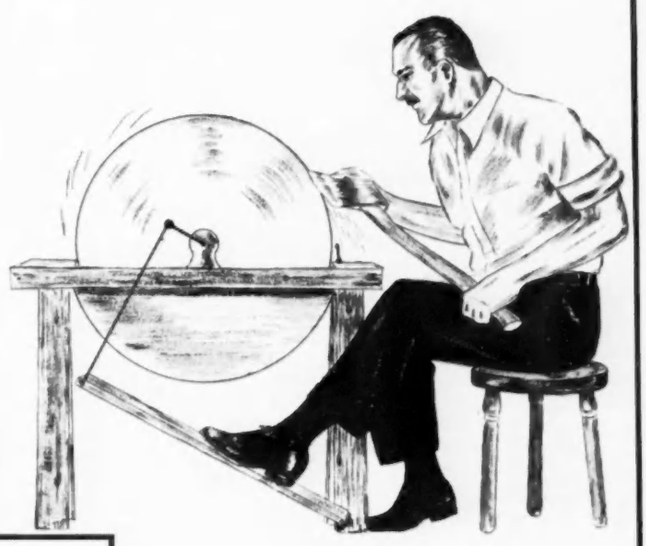
Sinclair Prairie Oil Company's Milam 1, western Montague County wildcat and 3½ miles northeast of the Ringgold deep pool, plugged back to 5679 feet, 4 feet above the 7-inch casing seat, after testing small volume of water at 5710 feet. Pipe will be perforated again at 5620-76 feet, where a small oil well was indicated from the Bend, topped at 5590 feet, before hole was deepened unsuccessfully to Ellenburger at 5795-6000 feet. Gulf Oil Corporation's Worsham 1, southwest offset to the Ringgold discovery, was drilling at 5180 feet. W. H. Peckham et al's Lawson 1, 6 miles southeast of the Ringgold pool, was drilling shale at 5085 feet, having found the Canyon and Strawn dry.

Sinclair Prairie Oil Company's Benton 1, discovery of a new Bend pool on the east side of Nocona townsite, increased its oil yield after 5-quart nitro shot at 5122-26 feet, followed by 3000-gallon acid treatment of Bend pay at 5127-37 feet. The acid proved beneficial as the well produced 199.04 barrels of oil on 24-hour swabbing test. It is awaiting potential gauge.

Three of the 6 active tests at Bonita, most active Bend lime pool in the district, passed up the discovery pay and will try to complete in the lower oil zone. Sinclair Prairie Oil Company's Gilbert 1, west offset to northeast outpost producer, yielded 5 feet of oil and 65 feet of oil-cut mud when formation tester was used at 5375-85 feet. Core pulled at 5442-56 feet netted 11-foot recovery of conglomerate and shale, and operations were halted to run pipe. The company's Lee 1 logged top of Bend at 5177 feet and first conglomerate at 5252 feet. It was drilling shale at 5330 feet, while Admire 1, south outpost, missed the upper pay and was awaiting drill-stem test at 5544 feet. David Doty 2 and Langford 1 were drilling at 5200 feet and 4090 feet, respectively. Magnolia Petroleum Company's Gilbert 2 was drilling at 4860 feet.

Dry shale formation has predominated in the comparatively thick Strawn section encountered by Seitz, Comegys & Seitz, Inc.'s Freeman 1, northwestern Denton County wildcat. It was drilling at 5810 feet on a 6000-foot depth contract. Amon G. Carter et al's Allen 1, southwestern Denton County deep test, was drilling shale at 2710 feet.

No Axe to Grind



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Southwest Texas

Fourth Productive Sand Found With West Ranch Extension

West Ranch in Jackson County, which has become one of the outstanding producing areas of the South Texas Gulf Coast, gained an even greater position last week as a fourth sand was uncovered. The discovery also provided a 1-mile west extension to the limits of the pool.

W. Stewart Boyle's Bennview Development Company 1, north corner Tract 35, and one mile west of the field on a Shell Oil Company farmout, flowed at the rate of 270 barrels of clean oil per day through 5/32-inch choke under 850 pounds equalized pressure. The completion was from perforations at 5462½-68½ feet. This test had been carried to 6020 feet, finding salt water with an oil show in the 5500- and 5700-foot sands.

The Boyle well ran considerably lower than the other producers in the field. About 3000 feet farther north, Shell Oil Company's F. L. Tiller, north corner of Block 29, found the sands much higher and was being completed in the field's 5700-foot pay. The latter sand was encountered at 5752-65 feet and casing was landed on bottom. Production was being obtained through perforations. The Shell Oil Company well in providing an extension to the field indicates that there will be considerable new drilling to the north and northwest of present production.

Texana Extension

Dick Hahn's J. R. Robertson 1, two miles northeast of the Texana field and in the southeast corner of Section 22, is called a completion to open a new producing area or an extension and another sand for the Texana area. It gauged 18 barrels of high-gravity distillate per day through 5/32-inch choke under 2400 pounds tubing and 2625 pounds casing pressure after perforations were made at 6172-78 feet. No estimate has been made on the gas volume, but it is high. This well originally was drilled to 7506 feet by Heep Oil Corporation, then taken over by Masterson & Swiger for completion. They turned the deal to Dick Hahn.

In the Lolita field, newest Jackson County area, six wells were in process of completion. These further an offsetting program and make the pool look like an area of major proportions. Three wells are productive in the sector's 5900-foot pay.

In Victoria County, Transwestern Oil Company's McFaddin 14-E opened a new Frio sand for the McFaddin pool. The test, 933 feet north of 13-E, flowed at the rate of 120 barrels of clean oil per day through 3/32-inch choke under 650 pounds tubing and 290 pounds casing pressure after perforations were made at 5292½-95½ feet. The well had been drilled to 6452 feet, but plugged back to complete in sand at 5288-5308 feet. When perforations were made, a drill-stem test was run using 500-foot water cushion. The well commenced flowing at the end of 9 minutes, pressure standing at 29 pounds. During the next 9 minutes it continued to flow with pressure mounting to 480 pounds and the fluid turning to pipe line oil. The pressure mounted to 540 pounds during the next 2 minutes of the flow and the tool was closed. The recovery was oil, which tested 29.4-gravity at 80 degrees and no salt water. The field's present pay is in the Heterostegina sand at 4400 feet.

The Coronado Corporation's K. L. Welder 1, wildcat five miles south of Seadrift in Calhoun County, was continuing to test. It was last reported cleaning into the pits making wash water with a slight color of oil under 650 pounds tubing and 2050 pounds casing pressures. The test was flowing through a ⅛-inch choke and was making slow progress in its completion due to the fact that the producing string is 9⅝ inches in diameter. Perforations were made at 5658-59 feet, apparently in the Catahoula.

Development on the west side of the Fagan field of Refugio County appears to be expanding the 5600-foot Frio production. Norsworthy Production Company's Fagan 2, located 2850 feet south of Fagan 1, is being completed in a 5600-foot sand. It had been carried to 5932 feet and electric log run. Side wall samples indicated commercial production and pipe was run to 5650 feet.

Submerged field exploration is a success in southern Kleberg County. Skelly Oil Company's State of Texas 1, Tract 385 of Laguna de los Olmos, flowed 25.12 barrels of 41.9-gravity crude in 24 hours under 1400 pounds working pressure after perforations had been made at 7459-61 feet. The test is showing a high gas/oil ratio which may prevent its ultimate completion as a commercial producer. On a previous gauge, the well flowed at the rate of 117 barrels per day through a ¼-inch choke, but gas overcame the flow. The test is opening a new Frio sand field.

Sinclair Prairie Oil Company's State 1, in Tract 694, and at the southern end of the East White Point field, Nueces Bay, is a gas producer through perforations at 3960-70 feet. It had been drilled to 7632 feet, but a fishing job caused the hole to be plugged back. This gas sand was encountered in a number of wells in the area but this is the first in the submerged sector of Nueces County to be completed at this level.

M. M. Miller & Sons' Gallagher 2, 1511 feet southeast of the discovery of the Gallagher field in Jim Wells County, tested oil and gas in the 5200-foot Frio sand at the discovery level, then went ahead to find a new 5700-foot pay. A sand section 17 feet in thickness was cored and on a drill-stem test the recovery was 300 feet of oil and mud under 600 pounds pressure in 20 minutes. Bottom-hole pressure was 1750 pounds flowing and 2500 pounds closed in. The test was carried to about 6000 feet and was awaiting orders to set casing for completion. This is the second to be drilled in the pool.

Gilcrease Oil Company's Pundt 1, at the northern end of the Wade City field, Jim Wells County, is a producer to open first crude production in the Pundt discovery sand. After being perforated at 4812-14 feet, the well flowed 97 barrels of fluid per day through ¼-inch choke under 225 pounds tubing and 1050 pounds casing pressure. Half was salt water and the rest was 31-gravity oil. The Pundt sand heretofore produced gas and distillate.

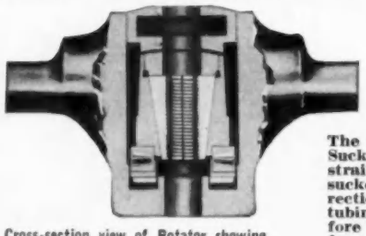
Another Pettus Zone Field Opened in Duval County

A second oil field in the Pettus zone since the first of the month was opened in Duval County as Forest Development Corporation was running a gauge in R. J. Rogers 1. The wildcat has a sand section between 4291-4306 feet with casing set on bottom at 4307 feet. First test showed too much gas. Finally perforations were made at 4307-9 feet and the well flowed at the rate of 1 barrel of 43.1-gravity oil per hour through 9/64-inch choke under 740 pounds working pressure on the tubing. It was still making a high volume of gas.

The discovery is in J. Poitevent Survey No. 275 and is about 2½ miles southwest of the Fitzsimmons field.

Approximately 1½ miles southwest, Bridwell Oil Company's Rogers 1 was completed last week as an oil well in the same zone. It, however, is believed to be in a separate sand. Bridwell concern is commencing Rogers 1-B, 796 feet due northwest of the initial producer.

Cox & Hamon and Gorman Yoakam have completed eight more wells in the Tarancahuas field of Duval County to widen production in this 2000-foot Frio sand pool.



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Texas Gulf Coast

Watch Brazoria Test With Depth Record in Balance

Glen McCarthy will test Munson 1, Bailey's Prairie wildcat in Brazoria County, early this week. If production is obtained within 440 feet of bottom in this 11,870-foot hole, Texas producing depth records will be broken. McCarthy holds this record at present, having drilled Andrau 1, Chocolate Bayou, to 11,430 feet to obtain distillate production. Munson 1, deepest hole ever drilled on the upper Texas coast, was delayed by a cutting and fishing job on tubing cemented at bottom. Squeeze job and perforations were made within a few feet of bottom for the test. McCarthy has taken additional acreage south of the well. Gulf Oil Corporation and Skelly Oil Company are the major leaseholders on this prospect, which was discovered with reflection seismograph by Humble Oil & Refining Company and Atlantic Refining Company in 1937. Both companies took acreage which they later dropped without drilling.

Humble Oil & Refining Company was testing State 1-A-247, Galveston Bay wildcat 10 miles southeast Cedar Point field. Drill-stem test of perforations at 8821-25 feet recovered salt water, and operators were setting retainer lower in the hole for another test. Two oil sands were reported above 9225 feet, where 5½-inch casing has been landed.

E. J. Deu Pree, Dallas, was squeezing perforations at 2916-26 feet in Texas Long Leaf Lumber Company 1-A, Walker County wildcat, to perforate elsewhere in a 140-foot sand section which showed well on an electric log. The test is said to have headed gas and oil while casing was run to bottom at 3100 feet. Two other thick sand sections were reported between 1900 feet and the 2916-foot strata which is Carrizo, or Sabinetown in the Wilcox. Swabbing at this zone recovered salt water and some oil. The test has attracted much attention in the district, as it may open Walker County's first commercial pool. Location is in the Mary Milsaps Survey, 5 miles southwest of Lovelady and 2 miles southwest of the Kittrell field, Houston County, producing from the Carrizo.

Tomball Deep Test Plugged Back

Deeper possibilities of the Tomball field, Harris County, were partially exploded by Martens 1, Standard Oil Company of Kansas' deep test which was plugged back from 8955 to 5575 feet for completion in the regular Cockfield pay. The company would not give information on the deeper formations.

W. L. Goldston staked Josey 1 in the Shaffer Survey, Harris County, 2500 feet northwest of Richardson & Christian-Carpenter Drilling Company's Marks 1, discovery on the Ogburn prospect. Christian-Carpenter Drilling Company has the contract. Marks 1, standing shut-in since official potential of 30 barrels of 58-gravity distillate and 1,000,000 feet of gas daily through 9/64- and 1/4-inch chokes, will be turned into tanks as soon as rig is up at Goldston's well to utilize the gas flow. Discovery operators are expected to announce another location on their 1100-acre block.

W. M. Hobson abandoned Allen 1, Charleston Gardens Subdivision, G. Green Survey, Harris County, at 7314 feet. This test was of a fault zone cutting the southern portion of the Fairbanks-North Houston area, and logged gas sands believed equivalent to the pay at Fairbanks. Jack Frazier drilled out of surface casing at 1121 feet in Johnson 1, wildcat on the Mt. Houston prospect. This test, fourth on the 5-year-old prospect, is partially supported by The Pure Oil Company and H. C. Cockburn.

On official potential test, Sun Oil Company's Smith 1, Fig Ridge discovery 3 miles north of Seabreeze field in Chambers County, flowed 80 barrels of 37.4-gravity oil daily through ⅛-inch choke from 8849-53 feet. Tubing pressure was 3200 pounds, casing pressure 2560 pounds. Expected location by the company on Section 82, T&NO Survey, has not been announced.

Midstates Oil Corporation's Parker 1, east extension for the Bay City, Mata-

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STATEMENT OF CONDITION JUNE 29, 1940

RESOURCES

Cash and Due from Banks	$34,595,775.66	
U. S. Government Securities	12,986,461.38	
Other Bonds and Warrants	4,091,613.34	$51,673,850.38
Loans and Discounts		18,169,457.76
Overdrafts		328.63
Income Receivable Accrued		117,656.95
Stock in Federal Reserve Bank		180,000.00
Bank Premises		2,992,500.00
Customers' Liability under Acceptances		7,767.20
TOTAL		$73,141,560.92

LIABILITIES

Deposits		$66,102,411.49
Acceptances Executed		7,767.20
Income Collected Not Earned		59,021.19
Reserve for Interest, Taxes, Etc.		39,139.38
Reserve for Preferred Dividends		9,000.00
Capital—Preferred	$ 600,000.00	
Capital—Common	2,700,000.00	
Surplus	2,700,000.00	
Undivided Profits	924,221.66	6,924,221.66
TOTAL		$73,141,560.92

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gorda County field, made 263 barrels of 36-gravity oil through ¼-inch choke at 8560-91 feet. Thomar Oil Company was swabbing oil and water from 3160-75 feet in Sisk 1, semi-wildcat on the north side of Markham dome. Seven-inch casing was landed at 3320 feet in the 3700-foot hole. Operators cored seven sands showing oil and gas from 3000 to 3700 feet, recovering oil, gas and salt water on drill-stem tests.

New Sand for Old Ocean

Sun Oil Company opened a new sand in the Old Ocean field, Brazoria County, by completing Borsodi 4 for 68 barrels of oil daily through 3/16-inch choke. Flow was from 9364-76 feet, with a gas volume of 2,200,000 feet under 3100 pounds pressure, with casing pressure of 800 pounds. The new level is the tenth producing strata in the field. Humble Oil & Refining Company's Mettler 2, northeast extension attempt in the Angleton field, was running tubing at 9480 feet. In the Danbury area, this company's Bassett-Blakely 3 was plugged to 5190 feet, from which point it will be deflected toward the dome.

Pan-American Production Company will probably drill soon on a recently leased 715-acre tract on the southeast flank of Damon Mound, Brazoria County. Phillips Petroleum Company is reported ready to make location south of Andrau 1, deepest producer in Texas, in the Chocolate Bayou field. Andrau 1 extended the field 1½ miles northeast. Rowan & Nichols' Hubbard 1, discovery at Rowan (North Liverpool), was shut in, waiting on connections. New locations were deferred until the Texas Railroad Commission establishes a spacing pattern.

D. B. McDaniel will soon start a 10,000-foot test on the Tamina prospect, Montgomery County. Baldwin 1, McDaniel's wildcat which swabbed oil and water from 9370-400 feet, and was rumored about to be taken over by a major company, was still standing. This prospect has been tested 12 times, the current test being the deepest. In the Magnolia area, C. M. Frost continued to take up acreage in the Dean and Heidingfelder Surveys, with location rumored on South Texas Development Company land in Hillhouse Survey. The prospect was discovered by Humble Oil & Refining Company with seismograph in 1936, and the company drilled two core tests and a 6500-foot dry hole.

Sun Oil Company completed Hughes 9, extension in the new deep area southeast of Green's Lake field, Galveston County, for 355 barrels daily through ½-inch choke from 6550-62 feet. In Jefferson County, Titanic Oil Company cored oil sands at 7859-84 feet, regular level for the South China field, in Fontenot 1, ¾-mile east extension attempt, and ran casing to that depth. The company's Goar 1, edge offset to a 55-barrel pumper in the Hillje field of Wharton County, cored below 5750 feet and set casing to test a Marginulina sand at 5243-47 feet. In Wharton County, Thomar Oil Company staked Northington 1, wildcat on the Hungerford prospect, S. F. Austin 1 Survey, and dug pits. This prospect was found in 1931 by surface indications and torsion balance, and has been tested 7 times, the deepest penetration being 7250 feet.

Louisiana Gulf Coast

Two Touted Discoveries Abandoned After Testing

The number of potential new fields for Coastal Louisiana in 1940 was from 10 to 8 by the abandonment of one strike and failure of another to sustain production from the discovery level.

Continental Oil Company abandoned Nibletts Farms 1, Section 1-11s-5w, rated discovery of the Hayes field, Jefferson Davis Parish, after drilling to 11,748 feet and testing sands between 10,000 and 10,500 feet which had poorer apparent possibilities than the 11,604-24 foot zone which in March flowed 12 barrels of 42-gravity oil daily through 3/16-inch choke to indicate a new field. The failure is the fifth for the 11-year-old prospect located by Humble Oil & Refining Company and Gulf Refining Company. Seismic surveys along the Jefferson Davis-Calcasieu Parish line have yielded contradictory results, and it is not unlikely that the prospect will be abandoned. Continental Oil Company drilled Nibletts Farms 1 to satisfy a commitment incurred in selection of two blocks in the area. The second block in Section 1-11s-5w, on the Thornwell prospect, has not been drilled.

Belle Chasse field, 8½ miles southeast of New Orleans, Plaquemines Parish, also reverted to a prospect as The California Company terminated a series of tests in an attempt to shut off salt water in Delta Minerals 1, Lease 7. This well qualified as a discovery in April when it flowed 250 barrels of fluid daily from Miocene at 9974 feet, but developed a 90 percent water cut that could not be eliminated from any of several sands between 9950 and 10,500 feet. Last test, at 10,165-258 feet, recovered 3000 feet of mud, water and oil in 1½ hours. Operators were drilling deeper in No. 1, Lease 7; were at 7911 feet in No. 1, Lease 5, Section 2-15s-24e, and continued to carry No. 1, Lease 11, same section, as an inactive location. The company found the structure in 1938 with reflection seismograph. Vendome Petroleum Company drilled Whitney-Coulon 1, deep failure in Section 15-15s-23e.

Of the remaining eight 1940 discoveries, one, West Mermentau, Acadia Parish, was still in a questionable stage, and six are 1-well fields. Erath, Vermilion Parish, appeared disappointing as The Texas Company's Trahan 1, was below 11,513 feet, 125 feet below the pay in Parish School Board 1, discovery. Trahan 1 was reported checking 100 feet lower than the discovery, and if dry will mark a southeastern limit so close to two dry holes north of the discovery that development will be greatly restricted.

Neale Most Promising Discovery

The Neale field, 3s-11w, Beauregard Parish, is the most promising 1940 discovery. Atlantic Refining Company was swabbing oil from 8360-8403 feet in Musser-Davis 1, Section 26-3s-11w, 2650 feet northeast of the first extension, Spiers 1, to reveal a condition uncommon in Coastal Louisiana fields. The three wells in the field, although widely spaced, have perforated the pay at nearly the same depth; Spiers 1 at 8355-70 feet, Whitmer 1 at 8356-70 feet. The structure is either one of low relief, with entrapment due to faulting, or a dome of sufficient size to have an extensive flat top. Either condition, taken with the sand thickening in Musser-Davis 1, promises a field of major importance. The company's Rice Land & Lumber Company 2-B, ¾-mile west of the discovery, was drilling at 7550 feet.

The importance of Kenilworth field, St. Bernard Parish's only production, may be determined by results in the company's Kenilworth 3, southeast extension attempt, which was at 11,000 feet with no shows reported. The discovery, Kenilworth 1, Section 59-13s-14e, flowed 230 barrels daily from Miocene at 10,630 feet in May, 1939. With a dry hole on the north, a failure in Kenilworth 3 will put the field in the same category as Erath. Another candidate for this class was La Fourche Crossing field, La Fourche Parish, where failure in Lisbon-Iberia Oil Company's Thibodeaux 1, preparing to test at 10,134-291 feet, following failure in Mikton Oil Company's Martinez 3, and poor production from that operators Martinez 2, might lead to a cessation of drilling in the area.

Vincent & Welch staked Harmon Heirs 1, Section 27-8s-1e, for a second test in the new Ritchie (Trilby) field, Acadia Parish. The discovery, McManus 1, was flowing 30 barrels daily by heads through ¼-inch choke from 3507-37 feet, with tubing pressure of 450 pounds and casing pressure of 800 pounds, after acid which increased production 10 barrels daily.

H. M. Naylor Oil Company's Acadia Development Company 1, discovery at West Mermentau, Acadia Parish, 2½ miles southwest of South Jennings, continued to be a question mark. The well was shut in two weeks ago after flowing 30 barrels of fluid hourly, 50 percent distillate and 50 percent salt water, from perforations in Heterostegina at 9700-18 feet. When squeezed and reperforated at 9700-12 feet, flow was 7 barrels of 40-gravity oil and salt water hourly through ⅛-inch choke, with tubing pressure 4300 pounds and casing pressure 2500 pounds. The well, drilled by Loffland Brothers in Section 12-10s-2w, cored gas sands at 9114-25 feet, oil sands at 9250-65 feet, 9700-18 feet and 9765-9775 feet.

Vermilion Parish Test Promising

Union Oil Company's Webster White Heirs 1, wildcat in the White Lake area, Section 17-15s-1e, Vermilion Parish, may open the next new field. Operators made drill-stem test at 10,536-542 feet which reportedly confirmed kicks in electric log at 10,525-547 feet by flowing crude oil, instead of the expected distillate. Results were withheld pending a production test scheduled for the week end. Tanks and separators were erected by the company, which took the well over from Louisiana Land & Exploration Company at 8900 feet and drilled to 10,670 feet, where 5½-inch liner was set. LL&E Company abandoned a well in Section 21 at 11,033 feet, and junked an 8900-foot test in Section 9 in 1939. Shell Oil Company drilled a 7000-foot failure in Section 10, in 1933.

Superior Oil Company, notably successful in opening flank production around long-known salt domes, swabbed salt water at 8567-77 feet in State 3, wildcat

on southwest flank of Calcasieu Lake Dome, Cameron Parish, and will test new perforations at 9450-60 feet. The well, the fourteenth and deepest ever drilled on this 13-year-old prospect, is the company's third attempt; the first two bottoming in salt. Louisiana Land & Exploration Company found the structure with torsion balance and drilled several wells into salt. Also in Cameron Parish, Phillips Petroleum Company was testing Miami Development Corporation 1, Chenier Ridge, or Grand Chenier, wildcat in Section 11-14s-6w, at 10,192-212 feet.

In East Baton Rouge Parish, Golding & Farris' Paulet 1, Kleinpeter wildcat, Section 57-7s-1e, 5 miles east of the University field, was standing at 7000 feet after drill-stem test at 6710-20 feet recovered salt water. The well is 1½ miles south of McManus 1, a 7502-foot failure. In Iberville Parish, Falcon Seaboard Drilling Company's Folse 1, Samstown area wildcat, was waiting on orders after running electric log to 10,005 feet. In St. Mary Parish, Hammil & Smith and H. De Arman quit Eves 1, wildcat in Section 68-13s-8e, at 3000 feet.

A Sparta-Wilcox test of interest may result from Gulf Refining Company's acquisition of acreage dropped by The Texas Company and Shell Oil Company on the Lake Cocadrie prospect in Evangeline Parish. Exploration of this area has been delayed by refusal of a large freeholder to lease.

Amerada Petroleum Company's Gheens Realty Company 4, outpost test in the Bayou Des Allemandes area, Section 13-15s-20e, St. Charles Parish, was completed for 138 barrels of 35.4 gravity oil daily through various chokes from 7569 feet. Fluid was 10 percent water, tubing pressure was 750 pounds, and casing pressure 250 pounds.

North Louisiana

Olla Wild Gas Well Has Crater Hole at 300 Yards

H. L. Hunt's Louisiana Central Lumber Company 19, C NE NW 36-10n-2e, in the shallow Olla field, LaSalle Parish, which blew out while drilling around 3500 feet and remained out of control, last week encountered further trouble as a hole developed 300 yards from the well. The hole Thursday was 60 by 30 feet. Operators studied feasability of drilling a relief well but had not at that time decided upon their course. Horizon from which the gas is coming has not been determined.

The Olla field for the first time in several weeks went without a new producer, the only completion in that area being a dry hole, three miles north of oil production.

The deepest wildcat drilled in North Louisiana in several months was abandoned at 9215 feet. This is Continental Oil Company's Tensas Delta 1, C N½ SW SW 12-9n-7e, Catahoula Parish. With elevation of 61 feet top of the lower Cretaceous was placed at 8500-8550 feet.

Shell Oil Company assigned gas rights on wildcat acreage it holds in DeSoto Parish, Louisiana, and Shelby County, Texas, to Union Producing Company and two wildcat tests to 6500 feet will be drilled by the latter company, one in each state. Union Producing Company made location for Garrett 1, William Moody Survey, Shelby County, and will drill the Louisiana test in Section 32-12n-16w, DeSoto Parish.

Under terms of the agreement, Shell Oil Company retains an interest in any gas/distillate production and if oil is produced will take over the wells, reimbursing Union Producing Company for drilling costs.

J. M. Conner and associates' J. C. Williams A-1, SE NE 3-15n-15w, south Caddo Parish wildcat, drilled ahead after a gas showing at 5140 feet which was not tested.

Arkansas Permits

Six drilling permits were authorized last week by the Arkansas Oil and Gas Commission, as follows: Crawford County: Industrial Oil & Gas Company, Willaims Estate 1, NEc NW 6-9-30; Franklin County—Ozark Natural Gas Company, Anderson 1, SE SE NW 32-10-26; La Fayette County—Atlantic Refining Company, Bodcaw 2, C SW SE 29-17-23; Nevada County—Berry Asphalt Company, W. E. Meadows 1, NEc NW SW 4-14-20; Benedum & Trees Oil Company, Christopher 1, NE SW SE 11-14-20; and Union County—Sam Sebersky, Jerry B-1, C SW SW 21-17-14.

Arkansas

Fouke Discovery's Offset Fails To Find Production in Paluxy

Standard Oil Company of Louisiana's Sturgis 2, SE NE SW 1-17-27, offsetting the company's discovery well at Fouke, Miller County, cored at 3992 feet late last week, nearly 400 feet below the producing level. Gulf Refining Company's Eaton 1, SW NE 14-17-27, was abandoned at 3940 feet. However, this company may drill additional tests in the area, now held to be lenticular.

Dorcheat's first failure is Mid-Continent Petroleum Company's Keith 1, C SW NW 16-18-22, Columbia County, abandoned at 8913 feet. With elevation of 243 feet this test topped Buckner lime at 8843 feet, topped the Smackover at 8869 feet, topped the Reynolds lime at 8878 feet and logged porosity without saturation at 8888-93 feet. Top of the water table was established at 8891 feet. Location was made at Dorcheat for an east edge test to be drilled by McAlester Fuel Company.

Standard Oil Company of Louisiana's Zimmerman 1, SE SE 29-18-16, Union County deep geophysical wildcat, failing to find showings in the Smackover lime, set cement plug from 7250 to 7540 feet and prepared to test around 7200 feet. This well tested oil and salt water in the Lower Marine at 6789-99 feet.

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Two Northeast Tinsley Dome Tests Promise Production

Union Producing Company's Twiner 4, C NE NW 1-10n-3w, at Tinsley Dome (northeast) a drill-stem test from 5459-79 feet with ⅜-inch chokes top and bottom in 10 minutes showed 2390 feet of oil and 125 feet of drilling fluid. A later test from 5459-5529 feet, with same sized chokes and for 15 minutes, showed 2850 feet of oil, 90 feet of mud and 770 feet of salt water. The same company's Partridge 2, SE SE 1-10n-3w, in a drill-stem test with ⅜-inch chokes top and bottom in 12 minutes showed 2300 feet of oil and 92 feet of oil cut mud. This test was made from 5265-5305 feet and the horizon was identified as the Perry sand, a zone found productive only in one well 3 miles south. On deepening the well logged another oil sand, identified as the true Eutaw, which showed from 5389-5405 feet and preparations were made to run formation tester to 5408 feet.

The field was given a slight east extension in Union Producing Company's Cesana 2, SWc 18-10n-2w, which at 4843 feet and casing perforated at 4770-4800 feet wtih 118 shots gauged 302 barrels of oil in 11 hours through ¼-inch tubing choke with tubing pressure, 295 pounds and casing pressure, 190 pounds.

Several miles west of production in the Pickens field, in Union County, Exchange Oil Company abandoned Bennett 1, SE SE 28-12n-2e, at 5830 feet in sand and shale, after electric log. Hill & Hill abandoned Montgomery 1, SE SW SE 24-12n-2e, at 5698 feet after electric log. It was 198 feet in the Tuscaloosa (Woodbine).

Pending decision by the Mississippi Oil and Gas Board as to spacing rules no further locations have been staked in the Pickens field, which has four oil wells, all owned jointly by Exchange Oil Company and Kingwood Oil Company. The discovery well is being reworked to eliminate salt water which has been present since completion. The latest well is being standardized. All are on the Wilburn fee in Section 31-12n-3e.

Arkansas - Mississippi Corporation's Long Bell 1, SW NE 35-3n-17e, Clarke County wildcat, is shut down at contract depth of 7000 feet in shale. Selma chalk was topped at 2170 feet; Eutaw, at 3185 feet; Tuscaloosa, at 3610 feet.

H. D. Easton, Jr., of Amory, Mississippi, assigned two wildcat blocks in northeast Mississippi near the northwest Alabama Basin to Harrison Oil Company and J. S. Abercrombie Company of Houston, Texas, retaining a 1/32 over-riding royalty on any production from flowing wells and a 1/48 interest in any pumping well. One block of 5444 acres is in Lowndes County, northwest of the Columbus Syncline and two miles northwest of the town of Columbus, and the other of 5900 acres is in Monroe County, on what is known as the Smithville "structure."

Danciger Oil and Refining Company and Sun Oil Company are taking some leases in Mobile County, Alabama, where Humble Oil & Refining Company has 600,000 acres under lease. Latest recorded leases to the latter company is one for 6190 acres in Mobile County and another for 85,650 acres in Washington County from United States Lumber & Cotton Company.

California

Fresno County Wildcat Said Flowing, But Unconfirmed

Continued efforts of Jergins Oil Company to develop production in Chaney Ranch 1, wildcat in Section 29-14-13, Fresno County, nearly 30 miles northwest of Coalinga, has again directed speculative attention to that territory. Although not confirmed by the company, field reports state the well flowed oil in commercial quantities after being redrilled from 6700 to 7000 feet. Original bottom before plugging back to whipstock was about 9300 feet. Well was redrilled, using oil for circulating fluid and was washed with oil. Indicated flow is attributed by some to the gas blow recovering drilling fluid. Owing to extensive wildcat activity in this area in recent months, developments in the Jergins test are being followed with keen interest.

In the Cantua Creek area of Fresno County, midway between the Jergins test and Coalinga, The Texas Company was continuing efforts to develop production in S. P. 1, wildcat in Section 23-17-15. Bottomed at 10,116 feet, it was plugged to 9413 feet and demonstrated small volume of condensate together with considerable quantity of gas. Recently efforts were made to eliminate water, but after rerunning tubing the test flowed fresh water, gas and a trace of oil through ¾-inch choke.

Indications of commercial production have been obtained by British American Oil Producing Company's Edwina 1, wildcat in Section 11-3-16, Newhall district, Los Angeles County. While not completed, swabbing has indicated commercial production, although gas pressure may be insufficient to make a large producer. Oil is 30-gravity. Bottomed at 6196 feet, it was plugged back to 5854 feet and water string set at 4624 feet, while blank liner was set and tested through gun perforations at three different intervals from 5390 feet to 5809 feet. Some 200 feet of sand is reportedly open to production.

Superior Oil Company was making another unusual drilling record in Riggs 1 northwestern outpost well in Section 21-28-25, in the Rio Bravo field, Kern County, having taken the project to 10,306 feet in 24 days drilling. Location is a mile northwest of the productive limits at Rio Bravo.

The Petrol Corporation's Tognazzini 3-15, outpost in Section 15-8-32, Gato Ridge field, Santa Barbara County, was completed flowing 2000 barrels daily of 14.9-gravity oil, cutting 2 percent from 2900 feet.

Rocky Mountain States

Second Shannon Well for Cole Creek Nears Completion

The second commercial Shannon-sand producer in the Cole Creek field, Natrona County, Central Wyoming, was indicated as operators reported an indicated production potential in excess of 300 barrels daily for General Petroleum Corporation's 31-21-G, C NW NE NW 21-35n-77w, ¼ mile east of the Shannon discovery. Production was encountered in the formation at 4569 feet, with well reported checking higher than the discovery. The company's 51-21-G C NW NW NE 21-35n-77w, was drilling below 1917 feet.

First of several Wall Creek producers in the Salt Creek field, Natrona County, Central Wyoming, to be deepened for recompletion in the Sundance, Stanolind Oil & Gas Company's Unit 8-A, CNW NE 26-40n-79w, was whipstocking out of old hole at 1148 feet to deepen. Operators were unable to pull liner from the old hole, bottomed at 1510 feet.

Two new wells were underway in the Lance Creek pool, largest Rocky Mountain producing field, Niobrara County, Eastern Wyoming. Continental Oil Company's Apex 6 OPC-3, CSE NE NW 34-36n-65w, and the company's Otto Rohlff 12, CSE NW SW 32-36n-65w, both inside locations in the northern sector of the field. What appears to be one of the best wells so far this year in the pool is Argo Oil Corporation's Elliott 13-A, CSE NE NW 5-35n-65w, an inside location, which tested 60 barrels of oil hourly from the first Leo sand at 5012-5202 feet and was coring below 5385 feet for the second sand for further testing.

Several other wells in the field were also near completions, including Continental Oil Company's Otto Rohlff 11, CSW NE SE 31-36n-65w, coring in Leo objective sand below 5281 feet; A. B. Cobb's Novick 6, SE NE NW 6-35n-65w, which topped Leo sand at 5310 feet, deepened to 5342 feet and shut down to run 7-inch production casing. The Ohio Oil Company's Elizabeth Lamb 16 Account 1, CNW NE 5-35n-65w, which was preparing to perforate 7-inch opposite Leo sand, topped at 5148 feet. The test was drilled to 5395 feet and had casing cemented at 5390 feet.

Drilling was underway on two recent starts in North Wyoming, and location was released for another new test last week. Latest report is Kinney-Coastal Oil Company's Government 4, SE SW 13-56n-98w, on the western end of the Garland field, Park County, where spudding machine was being moved in to start.

In the Frannie field, Park County, Wyoming, Valentine M. Kirk's 3, NW NW SW 24-58n-98w, was drilling below 280 feet. A new start in the area was Yale Petroleum Company's Frisby 1-B, CSW NE NE 31-52n-100w, in the Oregon Basin field, Park County, drilling below 1445 feet.

Sinclair-Wyoming Oil Company resumed its Sundance development campaign in the Lost Soldier field, Sweetwater County, Southwest Wyoming, last week with Lost Soldier 94-A, NW

NW NE 10-26n-90w, drilling below 400 feet. The Sundance is expected at around 2000 feet.

Work was starting on an important new wildcat spotted on the Absarokee structure, Stillwater County, North Montana, by The Texas Company. The company's 1, SE NW 10-4s-19e, was spudding with heavy-duty rotary equipment and is scheduled to go to the Dakota-Lakota formations, expected at around 6000 feet.

Broadview Dome Oil Company's Hallbeitter-Stoltenberg 1, NE NE SW 18-3n-23e, Yellowstone County, Montana, reported 300 feet of oil in hole after standing 48 hours at 5129 feet, and was swabbing down for further testing at this level. It is a wildcat on the Broadview Dome structure.

New Mexico

Northeastern Lea County to Get 6000-Foot Wildcat Test

Northeastern Lea County has been assigned a 6000-foot wildcat project that is supported by geophysical information and the fact that it is on a northwest strike from the Wasson field, largest oil area in West Texas. Intermediate acreage in Texas has been leased at comparatively high prices with two companies buying extensively first drilling core holes. Ventura Oil Company headed by Ben Nysenwander, made location for Lowe 1, C SW SE 26-13s-37e, and drilling contract was awarded C. J. Davidson Drilling Company. Location is 12 miles south by west of Morton et al's State 1, abandoned in 1930 at 5267 feet after logging show of oil at 5120 feet with an elevation of 3901 feet.

Continental Oil Company et al's Vaughn 1-B-12, C SE NE 12-24s-36e, Toby sector of the Cooper-Mattix district, sprayed 18 barrels of oil and 17,000,000 feet of gas when tested via casing with drill pipe in the hole. The hole is bottomed at 3560 feet, and 5½-inch pipe is cemented at 3447 feet. Tubing packers will be utilized in curbing the gas yield.

The southwest portion of the Eunice field was assigned two new operations, including Texas Pacific Coal & Oil Company's State 19-A, C SW SE 7-22s-36e, which was drilling below surface pipe at 400 feet, and Cities Service Oil Company's Closson 2-B, C NE NE 19-22s-36e.

Fifth oil producer for the Halfway pool, western Lea County, was assured when Sam Weiner et al's State 1, SWc NE 16-20s-32e, filled 1000 feet with oil in two hours after drilling to 2566 feet, or 946 feet above sea level. Casing has been run to complete.

Humble Oil & Refining Company's State 3-M, southeast outpost for the Arrowhead pool, is slated to plug back after yielding 12 barrels of fluid hourly, 50 percent water, following 3000-gallon acid treatment at 3710 feet, or 301 feet sub sea. Source of the water is being checked, as the well is considered to be above the normal water table. Penrose & Clower have started operations on Walden 1-B, quarter mile northeast.

Michigan

Wildcatting Results Still Low; One Test Finally Completed

Wildcatters have been having a particularly tough time of it for the past 18 months with many promising developments flaring, only to fade away. The week saw a large part of the hope for two new shallow pools blasted. To offset, one wildcat was finally completed for a pumper and a semi-wildcat, a mile south of Wise pool, Isabella County, production looked good in upper beds.

Keen disappointment developed in Van Buren County where fast drilling to the shallow Traverse lime bed resulted in a dry offset to the discovery before completion of the discovery. Smith Petroleum Company's Fellows 1, CW½ SW SW 22-1s-16w, Geneva Township, Van Buren County, the discovery, filled up in two hours natural to 1049 feet, 7 feet in the Traverse. It failed to flow and fouled when rods were run. Completion was held up for a production test after clean-out. Before the clean-out had been completed, Smith Petroleum drilled in the west offset, Riemer 1, NE SE SE, 21-1s-16w, logging Traverse at 1046 feet and going into water at 1059 feet. Casing may be pulled and hole carried deeper. Later tests on the discovery indicated a 20 to 35 percent water cut in 24-hour production of 60 barrels.

[*Continued on page 73*]

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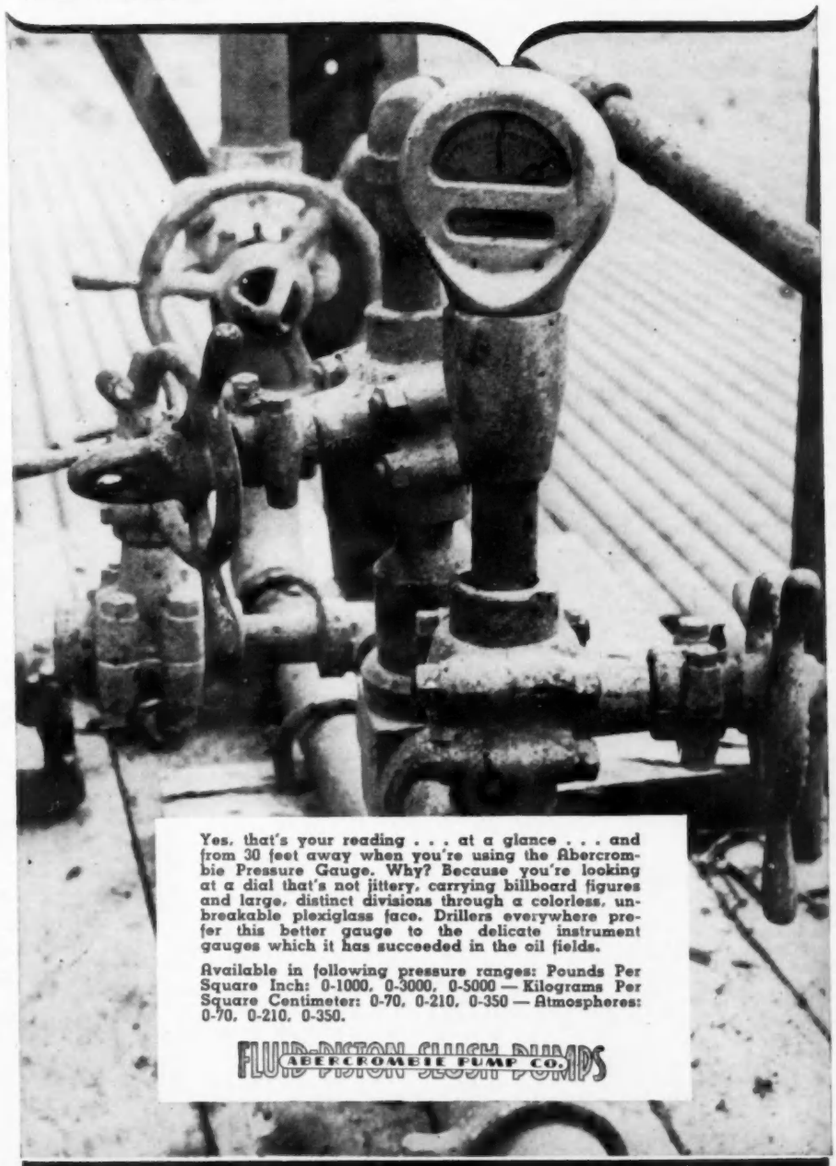

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UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia)—		
Placid Oil Co., J. W. Booth Unit B-1, 19-17-19	519	7648
Southwood Oil Co., H. C. Couch 2, 23-17-20	265	7791
Standard, Merritt Unit C-1, 16-17-20	265	7636
Union County (Urbana)—		
Marine Oil Co., Thompson A-11, 3-18-13	199	3580
Miller County (Fouke)—		
Gulf, Eaton 1, 14-17-27	*	3940

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Contra Costa County (San Ramon area)—		
Tassajara Oil Corp., Rasmussen 1	*	9777
Fresno County (East Coalinga Eocene)—		
R. S. Lytle, No. 68-18F	No Est.	8051
No. 82-18F	2090	8291
Standard, No. 68-13C	3717	7991
Superior, Cagle B-5	1305	7776
Kern County (Cole's Levee)—		
Richfield, KCL-A 18-28	1397	9025
KCL-A 54-33	917	9350
Kern County (Edison)—		
Jergins Oil Co., McCowan A-5	100	1594
Kern County (Paloma)—		
Western Gulf, KCL-A 74-3	624	11216
Kern County (Rio Bravo)—		
Union, Kerneo 56-34	1419	11470
Kern County (Ten Sections)—		
Shell, KCL-A 8-19	2102	8190
Los Angeles County (Long Beach)—		
S. C. Bush, Exchange 3	No Est.	2900
Los Angeles County (Montebello West)—		
R. R. Bush Oil Co., Zanetti 2	65	7776
Wood-Callahan Oil Co., Todd 2	156	7771
Los Angeles County—(Rosecrans-Athens)—		
St. Anthony Oil Corp., Gordon 2	1650	7854
Los Angeles County (Wilmington)—		
M. A. K. Oil Company, No. 4	210	3442
Morton & Elder, Harbor 2	217	3465
Royalty Service Corp., Nelson B-3	67	3520
Ventura County (Shiells Canyon)—		
El Rancho Oil Co., Elkins 4	61	3055
Ventura County (Ventura Avenue)—		
California Alliance Pet. Corp., Schmidt 1	*	9567
Shell, Taylor 120	3438	7600
Tide Water, Hartman 22	316	9130

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Orchard Oil, Norton 4, sw sw sw 7-2n-8e	*	2930
A. R. Madden, Sloan 1, cne se sw 6-4n-5e	*	4296
Kingwood, Danks 1, nw se ne 5-5n-5e	*	2723
Clinton County—		
Brookside, CB&Q RR 2-D, ne sw sw ne 1-1n-1w	1248	2996
T. W. Lee, Hanseman 3, nw ne sw se 1-1n-1w	442	2918
Gulf, Adams-Schmitz 2, cw½ ne se 2-1n-1w	2899	2899
Felton 4, e½ sw ne 35-2n-1w	4316	2912
Shell, Criley 14-C, ce½ nw ne 2-1n-1w	1991	2906
Criley 15-C, cw½ se ne 2-1n-1w	2741	2913
Ames, Hicks 2, lot 10, blk 5, 12-1n-1w	120	4068
L. C. Simmell, Noe 1, se sw ne nw 13-1n-1w	125	2945
Adams, Copple 17-D, cw½ ne sw 35-2n-1w	12,000	2898
T. W. Lee, Keister 1, ne se ne 35-2n-1w	8134	2923
W. C. McBride, Carson 9, ce½ ne se 35-2n-1w	12,000	2912
Tuesday Oil Co., Buehler 7, w½ sw sw 36-2n-1w	1626	2907
Coles County—		
Carter, Cobb 1, c sw se 10-13n-7e	*	3226
Crawford County—		
Carl Robinson, Walters 1, se nw se 19-7n-12w	*	2962
Edgar County—		
Sam Burkitt, Schoitker 1, cw½ nw se 30-16n-11w	*	1810
Edwards County—		
Jarvis Bros., Wick 1-B nw se ne 24-2s-10e	45	1568
Noah & Morrison, Barnes 1-B, ne ne ne 24-2s-10e	30	1590
Superior, Works 1, sw sw sw 18-2s-11e	46	2351
Fayette County—		
Texas, McKee 8, ne sw nw 6-6n-3e	230	1546
Yakel 6, se se sw 6-6n-3e	49	1579
Carter, Durbin 26, se se se 5-7n-3e	132	1572
A. Miller 2, ne sw se 8-7n-3e	42	1600
Holman 1, sw se se 3-8n-3e	72	1515
Fortner 6, nw sw ne 10-8n-3e	198	1541
Sickles 1, ne nw sw 10-8n-3e	552	1601
Wright 13, nw ne se 20-8n-3e	168	1588
McClain 3, sw sw sw 33-8n-8e	378	1588
Hamilton County—		
Morrison, Smith 1, swc se 31-3s-6w	*	1415
Maroney, Krause 1, s½ nw sw 30-3s-7w	*	950
Kingwood & Exchange, Martin 1,	36	2252
Jefferson County—		
Carter, Hall 8, e½ 4-1s-2e	161	1964
Hughes Pet., Self 1, sw se se 10-1s-2e	*	2155
Madison County—		
Ruby Jones et al, Early 1, nw nw ne 30-6n-5w	*	1915
Marion County—		
Texas, Centralia 61, nw se nw ne 4-1n-2e	45	2098
Corbin Jr. 9, sw nw nw nw 5-1n-2e	1401	3376
Reed 9, nw ne ne nw 5-1n-2e	902	3375
Smail 15, ne ne ne 5-1n-2e	1003	3482
Bundy 8, sw sw ne 6-1n-2e	250	1858
Bundy 9, nw se nw ne 6-1n-2e	1504	3422
Friedrich 17, se ne sw 6-1n-2e	301	1869
Friedrich 18, nw ne sw 6-1n-2e	175	1869
Johnson 15, sw nw se 6-1n-2e	239	1870
Young 27, sw se nw 21-2n-2e	1005	3527
Kleinschmidt 17, nw sw ne 28-2n-2e	706	3520
Lee 17, ne se se sw 28-2n-2e	350	3471
Stroup 20, sw ne sw se 30-2n-2e	735	3410
Stroup 23, sw se se sw 30-2n-2e	1007	3426
Stroup 16, nw ne ne nw 31-2n-2e	750	3400
Stroup 17, nw sw ne nw 31-2n-2e	800	2085
Stonecipher 18, swc se 32-2n-2e	950	3454
Stonecipher 19, ne se se sw 32-2n-2e	1010	3440
Stonecipher 20, nw sw se sw 32-2n-2e	850	3410
Williams 21, sw se sw sw 32-2n-2e	1405	3362
Hays 11, nw se sw 33-2n-2e	52	2100
McCoy 11, sec ne nw 33-2n-2e	775	3480
Shereshovech 11, se sw nw 33-2n-2e	400	3515
Harvey Oil Co., Kagey 7-B, ne sw sw sw 33-3n-2e	200	3565
Kagey 11, nec se se 33-3n-2e	3060	3546
Ohio Oil Co., Murray 17, sw ne sw 7-1n-2e	120	2096
Loyd 34, nw sw sw se 28-2n-2e	1990	3476
Magnolia, Shanafelt 37, ne ne nw 21-2n-2e	753	3519
Young 38, nw ne sw 21-2n-2e	728	3526
Young 111, se sw se sw 21-2n-2e	1035	3514
Blackstone, M&I RR 5-C, se sw se nw 20-2n-2e	85	3476
Shell, Young 11, se sw se se 20-2n-2e	130	1873

Summary of Drilling Operations in the United States, Week Ended July 13, 1940

	WELLS COMPLETED							*PERMITS FOR NEW WELLS				
	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1940	Total this Date 1939	This Week	Total this Month	Total 1940	Total this Date 1939	Year Total 1939
Alabama	.....	.....	.....	.....	.....	3	1	.....	.....	.....	.....	.....
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas	5	4	.....	1	1,140	101	124	6	9	81	129	223
California	21	19	.....	2	19,842	716	560	17	30	586	541	1,174
Colorado	.....	.....	.....	.....	.....	3	12	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Illinois*	83	72	.....	11	78,148	2,088	1,958	84	184	2,366	.....	893
Indiana	9	7	2	.....	1,024	225	86	.....	.....	.....	.....	.....
Kansas	40	34	2	4	46,977	1,025	715	33	78	1,065	801	1,583
Kentucky	9	3	.....	6	295	166	335	.....	.....	.....	.....	.....
Louisiana	38	28	1	9	5,128	907	545	37	68	906	683	1,449
Michigan	46	18	3	25	2,706	699	768	15	31	624	712	1,419
Mississippi	3	1	.....	2	550	110	4	.....	.....	.....	.....	.....
Missouri	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	.....	.....
Montana	3	2	1	.....	110	97	68	.....	.....	.....	.....	.....
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico*	10	8	1	1	3,900	399	341	3	15	354	.....	293
New York†	24	24	.....	.....	63	568	272	.....	.....	.....	.....	.....
North Dakota	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio	‡	.....	.....	.....	.....	462	474	.....	.....	.....	.....	.....
Oklahoma	36	15	3	18	2,884	1,191	1,125	28	66	1,009	1,125	2,059
Pennsylvania†	39	39	.....	.....	49	1,377	756	.....	.....	.....	.....	.....
South Dakota	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....
Texas	197	157	7	33	73,791	5,697	5,323	192	235	6,411	5,783	10,269
Utah	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
West Virginia	‡	.....	.....	.....	.....	285	262	.....	104	294	351	718
Wyoming	.....	.....	.....	.....	.....	71	67	.....	.....	.....	.....	.....
Total this week	563	431	20	112	236,697	16,202	13,797	415	820	13,697	10,125	20,075
Total last week	600	440	25	135	252,694	15,639	13,275	405	405	13,282	9,773	20,075
Total this year	16,202	11,900	852	3,450	6,289,448	.....	.....	.....	.....	.....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Illinois date from October 15, 1939; New Mexico from August 1, 1939.
† Includes water-input wells.
‡ Ohio and West Virginia not available for week of July 13.

United States Well Completions—*Continued*

Tomberlin, Young Strip 3, nw ne ne se 20-2n-2e 230 2500
Richland County—
DeKalb, Schilling 3-C, ne se sw se 32-4n-9e 278 2650
Pure, Wachtel Cons. 1, cw½ sw sw 7-4n-10e 1064 2965
Wabash County—
Bander et al, Summers 2, nw sw nw 3-1n-13w ..... * 2703
Hays & Wolf, Reed 1, nw se ne 4-1n-13w 150 2703
Bartlett, Stansfield 1, sw se se 19-2s-13w 19 1732
Tide Water, Elkins 6, se se se 30-2s-13w 120 2479
Washington County—
Gulf, Buhl 1, cnw se sw 23-1s-1w 683 1538
Wayne County—
Pure, Powell Cons. 2, cw½ sw sw 4-1n-8e 128 3095
Hubbell 2, cw½ nw nw 33-2n-8e 225 3105
Weinert, Muhlbach 4, cn½ sw nw 34-1s-7e 300 3304
White County—
Sun, Greathouse 7, sw sw se 33-4s-14w 225 2889
Garner 4, ne se sw 1-5s-10e.... 131 2997
J. W. Carter, Green-Starr 1, nw sw ne 25-6s-8e 35 2536
Skelly Oil, Storms 8, sw sw nw 14-6s-9e 63 2254

Indiana

Gibson County—
Hall Edwards, Rec., Maier 2, ne se se 14-3s-14w 400 2498
Lewis Prod. Co., Dunn 1, nw sw sw 18-3s-13w 195 2096
Continental, Bozeman Land Co. 8, sw ne nw 26-3s-14w 152 2079
Keck 6, sw sw sw 27-3s-14w... 52 2800
Perry County—
Southeastern Indiana O&G Co., Methodist Church 1, ne se se nw 22-7s-1w .....¶0.35 400
Posey County—
Somers & Egan, Keck 5, nw ne ne 34-3s-14w 70 2531
Ray Rayn, Keck 3, sec nw nw 34-3s-14w 150 2814
Randolph County—
Chas. Goodwin et al, St. John 1, cne ne 8-21n-12e 5 1276
Sullivan County—
Hossier Public Utility, Harpering 212, sw nw 14-9n-9e .....¶0.20 915

Kansas

Barber County—
Davis, Nuckolls 2, c se ne 30-31-11w 785 4377
Barton County—
B. B. & M., Esfeld 3, cn½ ne se 28-16-11w 2604 3379
Shell, Bitter "B" 13, nec se 6-16-13w 2725 3346
Stanolind, Schartz 14, csw 2-20-11w 212 3317
Butler County—
National Refining, North Lathrop 15, cw½ ne nw 17-23-4e 15 2070
Wagoner et al, Ramsey 1-A, sw nw se 8-24-5e ..... * 2501
Rex & Morris, Johnson 5, nec se 20-26-7e 35 2768
Adair & Morton, Thomas "A" 2, se sw se 10-28-7e 35 2767
Cowley County—
Ryan Consolidated, Couch "A" 1, sw ne se 13-20-5e 559 2800
Ellis County—
Dickey, Carmichael "B" 2, cn½ nw ne 18-11-17w 3000 3369
Cities Service, McCord 4, nw ne ne 26-11-17w 3000 3635
Tide Water, Riddler 2, ce½ se sw 1-11-18w 3000 3428
Harris et al, Schneidler 1, sec sw 3-13-17w (OTD 3362)..... 185 3482
Ellsworth County—
I. T. I. O., Boye 1, ce½ ne nw 16-16-10w 19 3344
Lauck et al, Meyer 1, se nwc 35-16-10w 3000 3270
Cities Service, Schroeder "A" 6, nw se nw 29-17-9w 3000 3229
Greenwood County—
Barker, Butcher 1, ne ne se ne 17-28-11e 30 1228
Lemon et al, Dean 1, ne sw nw ne 17-28-11e 25 1228
Marion County—
Youker, Martin 4, nw sw nw se 3-17-4e ..... * 2405
Harwood, McCoy 1, nwc se 14-17-4e 25 2388
Milburn et al, Hegle 1, c se se 16-17-4e 50 2404
Royer, Kroch 1, nec nw 28-18-4e (OTD 2452) ..... * 2510
McPherson County—
Hartman et al, Swanson 1, cs½ sw sw 18-20-5w 252 3346
Moulton et al, Briggs 2, ce½ sw sw 20-20-5w 3000 3371
Sunray, Lindquist 3, ce½ ne nw 29-20-5w 3000 3384
Continental, Bornholdt 3, cn½ se se 30-20-5w 3000 3374
Rice County—
Continental et al, Michels 4, se nw sw 12-18-8w 410 3252
Cities Service, Sledd 1, cn½ ne sw 27-19-9w ..... * 3234
Westgate-Greenland, Hodges 2, cs½ nw ne 25-20-6w 200 3346
Mitchell Dr. Co., Sangster 1, ce½ se sw 11-20-8w ..... ¶3.6 3217
Wiggins 1, c sw ne 11-20-8w.... ¶0.6 3225
Vickers, Bayer 1, ce½ se nw 20-20-10w 2106 3300
Russell County—
Texon, Bunker Hill 3, cn½ nw ne 26-14-13w 252 3165
Coralena, Phinney 2, cn½ nw ne 30-14-13w 1608 2938
Texon, Rogg 4, sw ne sw nw 35-14-13w 1260 2850
Central Petroleum, Boxberger 3, ce½ se se 26-14-14w 800 2997
Stearns et al, Olson "A" 3, ce½ sw sw 27-14-14w 2754 3008
Stanolind, Witt 3, ce½ nw sw 10-14-15w 31 3150
Stafford County—
Stanolind, Heggy 4, cw½ nw ne 10-24-11w 3000 3791
Transwestern, Banker "B" 2, cw½ se se 10-24-11w 3000 3821

Kentucky

Butler County—
J. C. Miller et al, Arnold 1..... * 608
Daviess County—
Staves Dr. Co., Ingleheart 2..... 180 1283
Master Oil Co., Richmond 5..... 120 1212
Riley & Marhill Oil Co., Baird 2.. * 1712
Jesse Ashby, Dickson 1..... * 810
Hart & Hart Construction, Nantz 2 5 794
Logan County—
Jesse Ashby, Vanderaught 1..... * 1665
Ohio County—
Steward & Stevenson, Hertzing 1 * 831
Geo. Hobbs, Dickens 1..... * 640

North Louisiana

Caddo Parrish (Pine Island)—
H. H. Groneman, Browning 2, 28-22n-16w ..... * 2660
J. W. Brown, Wells 3, 10-21n-15w 25 1720
Sloan Wells, Stiles 2, 32-21n-16w.. 25 2402
R. L. Milam, Bickham 2, 28-21n-15w 100 1543
M. L. Miller, Muslow 1, 31-21n-15w 50 1568
Stanolind, Noel Estate 2, 25-21n-15w 20 1556
Sklar Oil Co., Hobbs 4, 21-21n-15w 100 1550
Texas Co., Noel B-23, 14-21n-15w.. 150 1584
Catahoula Parish (Wildcat)—
Continental, Tensas Delta 1, 12-9n-7e * 9215
La Salle Parish (Urania)—
La Salle Associated, Fee 1, 19-10n-2e 50 1580
La Salle Parish (Olla)—
G. W. Zeigen, La. Central 17, 36-11n-2e ..... * 2511
Union Parish (Monroe)—
Memphis Nat. Gas Co., Potts 1, 15-21n-3e ..... ¶2 2196
Webster Parish (Cotton Valley)—
Hunt Oil Co., Stewart 6, 30-21n-10w 215 8569

South Louisiana

Anse La Butte—
Iberia Pet. Co., Moresie A-2..... * 2898
Bancroft—
Republic, Columbia Ld. Co. 18.... 11 7191
Caillou Island—
Texas, State 13 (wo) (otd 5477).. 36 2769
State 14, (otd 4346) 3888
Charenton—
Pan American, Ecuer 8-B 120 1132
Ecuer 9-B 20 1125
Ecuer 10-B ..... * 1142
Eola—
Amerada, Beverly 1..... 160 8570
Richardson, Haas Inv. 13..... 529 8575
Gulf, Mollere 4..... 360 8574
Garden Island Bay—
Texas, State 45 ..... 350 6197
Golden Meadows—
Brown & Wood, Gilbeau 1..... 115 2670
Hargrove, Gaspard-Rizan 6..... 250 5174
Gillis—
Fohs, Irwin 2 ..... 210 7236
Grand Lake—
Superior, State 13 ..... 355 8990
Amerada, State 11..... 8957
Hackberry—
Superior, Kaough et al 2..... 300 8541
Gulf, Erwin 1, (otd 6090) 280 6180
Leeville—
Texas, LL&E 73 ..... 340 8531
New Iberia—
Texas, Duhe 16 ..... 36 7010
North Crowley—
Humble, Quebodeux 1 ..... * 9634
Venice—
Tide Water, Manhattan Ld. Co. 3, (otd 7208) ..... * 7335
Ville Platte—
Continental, Fontenot 3 ..... 228 8988
Danciger, Vidrine 3 ..... 565 10,166
St. Charles Parish—
Amerada, Greens Realty 4, Bayou Des Allemandes area 138 7569

Michigan

Allegan County—
James Ramsey, Rozeboom 1, cw ne nw 15-2n-13w ..... * 1481
Fletcher-Leman, Nevenzel 3, cs nw sw 3-3n-14w 90 1466
Nevenzel 1, ne sw nw 5-3n-14w.. * 1570
Brailey-Heath Synd., Stankey 2, sw se se 4-3n-14w 200 1509
Howard Fowler, Stankey 2, ne se se 4-3n-14w 50 1470
H.C. Drilling Co., Van Dyke 1, ne se ne 8-3n-14w ..... * 1515
Fortney Oil Co., Minegar 1, ne sw se 24-3n-14w ..... * 1519
W. R. Borough, Inc., Fed. Bank 1, se ne sw 5-4n-14w ..... * 1500
W. S. Cook, Peter's 1, ne se nw 8-4n-14w ..... * 1531
Regal Dutch Pet. Co., Klingenberg 1, se se ne 33-4n-14w ..... * 1594
A. E. Kopprasch, Scholten 1, nw se sw 33-4n-14w ..... * 1597
Salem G. & O. Co., Gaca 5, nw ne sw 14-4n-13w ..... * 1592
Universal Oil Co., Smith 1, sw ne nw 15-4n-13w 45 1593
Calhoun County—
D. P. Hyne, Moore 1, sw se se 17-4s-8w ..... * 1304
Cass County—
Silver Creek Oil Co., Finley 1, nw nw sw 23-5s-16w ..... * 813
Flynn 2, sw nw nw 23-5s-16w.. * 816
Clare County—
American Prod. Co., Frackelton 4, cn½ sw 17-18n-5w .....¶ 10 1524
Eberhardt 1, csw 31-17n-3w.....¶1½ 1299
American Dr. Co., State X-1, cn se sw 29-19n-6w 160 3847
Gladwin County—
Stork Oil Co., Connoly 3, nw se nw 35-17n-2e 45 3530
Huron County—
Wallace Markle, Johnston 1, se se sw 8-17n-14e 26 2652
Isabella County—
Pure, Embrey B-5, sw ne nw 3-14n-6w 435 3611
Cities Service, Parsell 3, se sw se 8-16n-3w 66 3721
Allen 4, nw ne ne 17-16n-3w 433 3745
Gulf, Burch 4, sw se nw 17-16n-3w 290 3725
McClanahan & White, Nixon 4, nw ne se 17-16n-3w 260 3722
Kent County—
Whiteson O. & G. Co., Rulason 1, se se ne 17-6n-9w ..... * 2147
W. E. Dotson, Nichol 1, se sw sw 20-7n-12w ..... * 2378
Gordon Oil Co., Park 1, nw nw nw 30-7n-12w 50 1923
Swanson Con. Oil Co., LaQuea 1, se sw se 32-7n-12w..... * 2285
Smith Pet. Co., McShane 1, se ne se 32-7n-12w 90 1805
Monroe County—
Alcoba Oil Co., Rowe 1, nw se se 30-6s-6e ..... * 2143
J. J. McDonald, McCarty 1, ne ne ne 6-7s-6e ..... * 2085
Montcalm County—
Belvidere Oil Co., Steinman 1, ne nw nw 21-12n-6w .....¶8½ 1290
Goodnough 1, ne sw nw 18-12n-5w * 1300
Sun, Whitaker 1, ne nw ne 33-11n-8w ..... * 3265
Ottawa County—
Clapsaddle & Harris, Holland City 1, ne sw ne 29-5n-15w ..... * 1508
Marshal Bauman, Den Boer 3, cw se nw 23-7n-13w 126 1875
E. B. Strom, Nichols 3, nw nw ne 23-7n-13w 150 1871
Turner Pet. Co., White 3, ne ne nw 23-7n-13w 90 1876
Smith Pet. Co., Kurek 1, nw sw ne 34-7n-13w 190 1946
Van Buren County—
W. R. Borough, Smith 1, nw se sw 25-2s-15w ..... * 1136
John McLean, Pierce 2, nw nw se 21-2s-16w ..... * 1003
A. G. Hinz, Bray 1, se ne se 25-2s-18w ..... * 928
Merrill & Dean, Harrell 1, nw nw sw 4-1s-15w ..... * 1205
Tamblyn Dev. Co., Cornish 1, nw ne ne 28-4s-13w ..... * 1202

United States Well Completions—*Continued*

Mississippi

Yazoo County (Tinsley Dome)—
Union Prod. Co., Cesana 2, 18-10n-2w 550 4843
Yazoo County (Wildcats)—
Exchange Oil Co., Bennett 1, 28-12n-2e ..... * 5830
Hill & Hill, Montgomery 1, 24-12n-2e ..... * 5698

Montana

Glacier County (Cut Bank)—
Glacier Prod. Co., Yunck Unit 1, cnl 2-34n-5w .....¶9.0 2562
Toole County (Kevin-Sunburst)—
Black Label Oil Co., State 10, sw se se 16-35n-2w 100 1531
G & A Oil Co., Ellingson 2, ne nw nw 23-35n-3w 10 1570

New Mexico

Eddy County—
Franklin Pet. Corp., McIntyre 3-A, nwc se 20-17s-30e 95 3331
Yates 6-A, nw sw ne 6-18s-30e.. 960 2855
Ployhar & Rook, Gates 1, se ne sw 15-18s-30e 40 3185
Lea County (Arrowhead)—
Gulf, Christmas 5-C, nwc sw 18-22s-37e 90 3745
Lea County (Eunice)—
Cities Service, Closson 1-B, c se nw 18-22s-36e 70 3840
Lea County (Maljamar)—
Maljamar O&G Corp., Mitchell 4-B, c sw se 20-17s-32e 260 3744
Lea County (Mattix)—
Gulf, Knight-Bertha 1, c sw sw 23-24s-37e .....¶3.0 3600
Lea County (Vacuum)—
Texas Co., State 4-M, c sw nw 1-18s-34e 1056 4710
State 8-R, c ne sw 1-18s-34e....1329 4710
Lea County (Wildcat)—
Sam Weiner et al, State 1, c se se 30-12s-32e..... † 1373

New York

Allegany County—
Messer Oil Corp., Vosburg farm, Bolivar 5 1258
Sawyer & Matin, Wasson farm, Bolivar 10 1410
Moore & Repp, Hatch farm, Wirt.. 6 1125
D. V. McCarthy, Holcomb farm, Bolivar 4 1278
Ebenezer Oil Co., Emerson farm, Scio 6 1080
Bradley Prod. Corp., Monder farm, Alma 5 1272
Andrews Bros., Minnum farm, Alma 7 1452
Marsh Oil Co., Withey farm, Bolivar 9 1374
H. W. Patterson, Fuller farm, Amity 5 825
Hill, Hughes & Keller, fee farm, Genesee 6 1366

ALLEGANY: WATER INTAKE WELLS

Dick Oil Co., Cameron farm, Bolivar 1410
L. H. Thornton et al, Fassett farm, Willing 1170
Scio O. & G. Co., Fuller farm, Amity 880
Ada M. Gray et al, Smith & Gray farm, Genesee..... 1411
Messer Oil Corp., Courtney Hollow farms, Genesee 1362
Courtney Hollow farms, Genesee 1346
Courtney Hollow farms, Genesee 1376
Courtney Hollow farms, Genesee 1355
R. B. Moore 6, Daniels farm, Bolivar 1335
Messer Oil Corp., Miles farm, Bolivar 1428
Bradley Prod. Corp., Monder farm, Alma 1248
Monder farm, Alma..... 1278
Wm. Taylor Est., Breckenridge farm, Alma..... 1366
N. V. Franchot, Reddy farm, Alma 1412

Oklahoma

Caddo County—
Pace, Gingrich 1, sw ne nw 6-5n-9w ..... * 3640
Carter County—
C. Carter, Mobley 4, nw se ne sw 13-4s-3w (OTD 1163) ..... * 1293
Shell, Tubbi 16, sw nw sw nw 24-4s-3w (OTD 1153) 25 1215
Comanche County—
Wynn, Lowe 1, se se nw nw 7-1n-10w 10 300
Cotton County—
Scott, Masonic Lodge 1, nwc sw 13-4s-13w ..... * 2505
Cleveland County—
Sinclair Prairie, Marvel 1, nw sw ne 21-10n-2w (OTD 7267).....¶1.7 7173
Creek County—
Atlantic, Reading 3, ne ne sw nw 16-14n-10e (OTD 3230) 50 3346
Young-Martin et al, Grayson 1, se se sw sw 21-14n-10e ..... * 3390
Dunn & Miller, Cantrell 5, nw ne se 34-14n-10e 110 3296
Pepis, Jobland 4-A, se nw nw 12-18n-11e 10 1443
Hughes County—
Morgan-Gulf, Diamond 1, ce½ nw se 33-9n-9e ..... ¶6 3350
Jackson County—
Navajo, Hensley 2, se sw nw 10-1n-20w (OTD 1529) 60 1537
Kiowa County—
Curtiss, Sunninger 1, nw sw se 17-5n-15w ..... * 600
Sinclair Prairie, Watkins 1, se ne nw 19-7n-17w ..... * 1501
Latimer County—
Whitehead, Allen 1, nec sw 11-4n-19e ..... * 1200
Lincoln County—
Mid-Continent Pet., Kint 1, ne nw se 23-17n-2e ..... * 4765
Marshall County—
Johnson-Kemnitz et al, Neff-Godfrey 1, sw se ne 14-6s-6e ..... * 5890
Okfuskee County—
Stekoll, Likowski 1-A, sw se ne sw 23-11n-11e (OTD 1654) .....¶0.35 2075
Droppleman, Dill 1, se sec 34-12n-8e 1560 3578
Culbertson, Foreman 1-A, ce½ se nw 2-13n-10e ..... * 1524
Oklahoma County—
I. T. I. O., Bovine 10, ne nw ne se 24-11n-3w ..... * 2978
Olson Scritchfield 1, nw ne se 4-12n-3w 70 6766
British American, Military 1, sw nec sw 34-12n-3w 720 6540
Okmulgee County—
Jordan, Walker 2, ne ne sw ne 1-13n-11e 10 2046
Allen, Snakeya 1-A, nw nw ne nw 25-14n-12e 25 2021
Wilson, Corbray 3-A, csw se 22-14n-14e ..... * 1790
Pawnee County—
Haynes, Buck 1, nw nw ne ne 6-20n-9e ..... * 50
Sample, Bellas 2, nw sw ne 28-20n-9e 5 2078
Payne County—
Allen et al, Freeman 1, swc se 24-19n-5e ..... * 3630
Pottawatomie County—
Garr, Walker 1, nec se 5-5n-5e (OTD 3148) ..... * 2965
Seminole County—
T-N Development, Reed 2, sec nw 3-5n-5e ..... * 2794
Vallines, Millsap 3, se nw sw 23-7n-5e (OTD 3096) 20 3080
McBride, Scout 3, swc se 7-9n-7e.. 20 4004
Stanolind, Aldridge 1, se sw ne 32-9n-8e ..... * 4453
Tillman County—
I. T. I. O., Goodman 2, nec se 1-3s-19w 189 3142
Wagoner County—
Finefield, Kane 1, swc se 23-18n-18e ..... * 400

Pennsylvania

BRADFORD DISTRICT

Walker Bros. et al, Bing 27..... 2 ....
Merry Bros., Burger..... 2 ....
V. G. Smith, fee..... 1 ....
Penn Valley Crude Oil Corp, fee.. 1 ....
Forest Oil Corp..... 1 ....
Forest Pet. Corp., 2 wells..... 3 ....
Niagara Oil Corp., 3 wells..... 3 ....
J. P. Kervin, Baker..... 2 ....
Tapp, Galletts & Buffington, Trs., Fee ..... 8 ....
Bradford Tr. Co., 15 wells..... 15 ....

Water Intake Wells

Pine Run Oil Co., Bing 130-1-2-3-4-6 ....
Forest Oil Corp..... ... .
Forest Pet. Corp..... ... .
Niagara Oil Corp., 3 wells..... ... .

MIDDLE DISTRICT

John H. Glass, Mitchell..... ⅛ ....
Calderwood Shreffler et al, Mitchell ¼ ....
C. S. Ehret, Stull..... ⅜ ....
W. T. & F. T. Barry, Given & Barry ..... 5 ....
Joseph Karl et al, Lot 106..... 1 ....

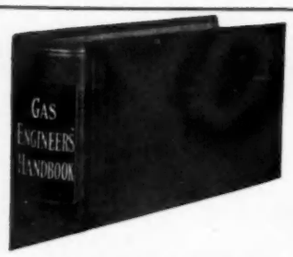
BUTLER-ARMSTRONG DISTRICT

Dr. Walters et al, John Flick Hrs. 5 ....

Texas Panhandle

Carson County—
Texas Co., Cooper 10-E..... 368 3215
Gray County—
Continental Oil, Brown 4..... 88 3290
King Oil Co., Horner 15..... 419 3260
Geo. Simpson 8..... 377 3260
Stanolind, Merten 13..... 331 3314
Stekoll Oil Co., Combs-Worley 4-A 20 3072
D. R. Tripplehorn et al, Webb 5.. 20 2655
Hutchinson County—
Clay Bros et al, Herring 6-A.... 49 3254
Cree-Hoover & Dye, Harvey Sisters 5 350 3027
Harvey Sisters 6..... 450 3035
C. L. McKinney et al, Pitcher 8.... 250 3185
Smith Bros. Ref. Co., Hodges 6.. 20 3046
Texas Co., Lewis 26..... 370 3030
Lewis 28..... 245 2970
Moore County—
Phillips Pet. Co., Witherbee 1... ¶3.1 3323

*Failures; †Junked; ¶Million cu. ft. gas.



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6. Testing and Measurement
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United States Well Completions—*Continued*

South Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Hidalgo County—		
H. J. Porter et al, Febronio Flores 1 (Samfordyce)	250	4147
Jackson County—		
Magnolia, West 91 (West Ranch)	950	5595
A. E. Masterson & R. B. Swiger, Robertson 1 (WC) sec 22	¶10 & 100	7506
John G. Mayo & E. R. Kirkpatrick, Tucker 2 (WC) lot 6	•	7010
Renwar Oil Corp., Phillipi 3 (West Ranch)	1250	5775
Texas Co., Mortgage Land & Investment Co 3 (Ganado)	250	5098
Jim Wells County—		
Arkansas Fuel Oil Co., Nollkamper 1 (Wade City)	400	4950
Bridwell Oil Co., Hoffman B-2 (Ben Bolt	750	5253
Rodney Delange, Maggie McNeil 11 (Wade City)	700	4945
Gilcrease Oil Co., Adams 1-B (Alfred)	150	4691
Pundt 1 (Wade City)	85	4974
Henshaw Bros., Allen 1 (WC) tr No. 3	•	5226
Al Parker, Seeligson et al 2-P (Premont)	30	2380
H. R. Smith, Albrecht 2 (Wade City)	700	4924
Kleberg County—		
Skelly Oil, Texas 1 (WC) tr 385	100	9428
Live Oak County—		
Coquat, Holland & Smith, Goad 1 (White Creek)	40	1515
Luling O. & G. Co, Norther Royalty Co 2 (WC) sur 1	•	3200
Moore Dev. Co., McGriff 2 (Oakville)	87	1851
Nueces County—		
Humble, Texas 1 (WC) sur 723	¶.25	5200
Lockhart Oil Co., Anderson 1 (Agua Dulce)	¶10 & 100	7020
Pure, Little 1 (WC) sur 194	•	8957
S. E. W. Oil Corp., Fred Tally 1 (WC) Gregorio Farias sur	•	3916
Sinclair Prairie, Texas 1 (974) (E. White Point)	500	5639
Union Prod. Co., Austin 1 (Agua Dulce)	¶10 & 100	7202
Talbert Hrs 8 (Agua Dulce)	¶10 & 100	6977
Windsor Oil Co., Howze 4 (Minnie Bock)	125	3921
San Patricio County—		
Republic Natural Gas, Rachael 33 (E. White Point)	550	5650
Victoria County—		
Magnolia, Simon (swain) 2 (Victoria)	7	3052
Nutex Oil Co., Zimmer 5 (Coletto Creek)	150	2810
Texas Gulf Prod. Co., Linnville 1 (WC) C. M. Creanor sur	75	6512
Wisehart 1 (WC) Francisco Perez sur	¶5 & 75	6506

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County—		
Bridwell Oil Co., Rogers Est. A-1 (WC) Sur. 21	400	4335
Cox & Hamon & Gorman-Yoakam, Gorman-W. K. Hoffman 5 (119) (Tarancahuas)	187	2033
Gorman-Hoffman 6 (119) (Tarancahuas)	132	2028
Hoffman 1 (109) (Tarancahuas)	88	2092
Hoffman 3 (109) (Tarancahuas)	185	2093
Government Wells Oil Co., Lundell 3 (Piedre Lumbre)	•	2237
Magnolia, Well 14 (495) (Hoffman)	93	2672
Well 15 (495) (Hoffman)	85	2665
Jim Hogg County—		
Humble, King-Colorado 14 (Colorado)	550	3012
Starr County—		
W. R. Davis, Davenport 3-A (Rincon)	600	4298
Slick Est. 12-A (Rincon)	600	4351
Slick Est. 31-B (Rincon)	200	4354
A. A. Kelley, Higino Gonzales 1 (WC) sh 62	•	185
T. E. Stephens, Guerra 2 (WC) por 69	¶20	3071
Webb County—		
Cecil Hagen & Dan Auld, Frost (Masterson) 1 (WC) sec 7	•	2307
Magnolia, Benavides 10 (West Cole)	35	2348
Volpe-Benavides 41 (Volpe)	40	2460
Mayfair Oil Corp., Rufino Lopez Est. 1 (Volpe)	5	2454
Transwestern Oil Co., Bruni Est. 4 (Glen)	224	2182
Zapata County—		
Buffalo Oil Co., Martinez 1 (Mirando Valley)	•	2260

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bastrop County—		
Ogden & Riddle, Riddle 2-B (WC) James B. Blalock sur	75	2017
Bexar County—		
Roger Putnam, Conaway 1 (WC) sur 154	•	855
Guadalupe County—		
Lavernia Lumber & Trading Co., Boeck 1 (WC) (Elm Creek Area)	•	1508
Magnolia, McKean 16 (Luling)	50	2104
McKean A-18 (Luling)	50	2110
Wilson County—		
E. E. Young et al, McMeans 1 (WC) C. W. Parrot sur	†	2105

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
W. H. Gant-Garvin & Wegener, Moore 34 (134.24-ac.)	264	3585
Kilgore Area—		
Producers Inv. Corp., Butts 10 12½-ac)	1200	3552
Longview Area—		
B. F. Phillips et al, Everett 5	1000	3610
Anderson County (Long Lake)—		
Hunt Oil Co., Keeling 2 (81.4-ac)	¶115	5324
Franklin County (Talco)—		
Texas Co., Barker 14 (468-ac)	420	4277
Henderson County (Rowe-Baker)—		
W. R. Manning & Pickens, Bell 1 (40-ac)	158	3195
Kaufman County (Wildcat)—		
Bateman & DeArman, Gen'l American Life 1	•	3036
Titus County (Talco)—		
Adams & Lyles, Inc., Page-Humble 1 (39.67-ac)	250	4345
Magnolia, J. A. Chapman 7 (341¾-ac)	•	4378

•Failures; †Junked; ¶Million cu. ft. gas.

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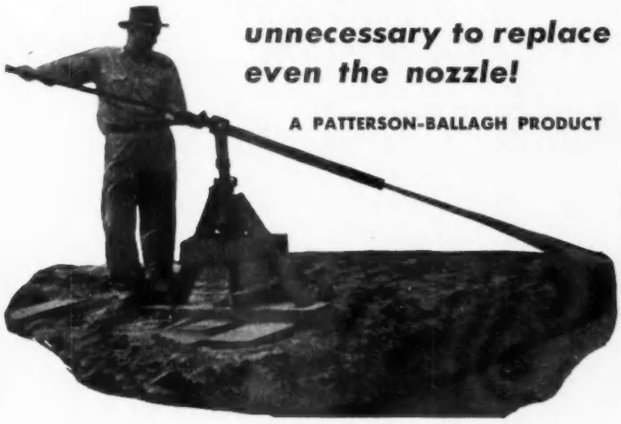

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United States Well Completions—*Continued*

North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
J. A. Chapman & McFarlin, Wilson 8-D	1296	4318
Continental Oil, Wilson-McCrory 16	968	4375
Magnolia, May Rutty 9-A	1140	3758
Ed. Peterson & DeMontel, Schildknecht 4	1248	4344
Pet. Producers-United Prod. Co., Shephard 6	1104	4356
Archer County (Mankins)—		
British-American O. P. Co., Parkey 2	360	4687
Archer County—		
L. T. Burns et al, Blewitt-State 1	10	1467
Cochran & Cain, Herron 4	*	878
Little 6-B	67	1388
Cox & Hamon, Little 5	38	1023
Archer County (Wildcat)—		
L. T. Burns et al, Blewitt-1st Nat'l Bank (Shell) 1	10	1471
Clay County (Wildcat)—		
Wirt Franklin & W. B. Omohundro, Staggs 1	*	6769
Cooke County—		
Bourland et al, Voth 5	28	1726
Humble, Hellman 2	106	1260
Texas Co., Walterschied 14	10	712
Montague County (Benton-Holmes)—		
United Producers-Continental, Braman 2	696	3852
Montague County (Nocona)—		
Stanolind, Zachary 3 (pb to 5297 ft)	1512	5372
Wichita County (K-M-A)—		
Continental Oil Co., Waggoner Bros, 10-B-C	184	3963
E. C. Oil Co., Burnside 1-D	26	3940
Falls Ref. Co., Tidwell 2	14	3860
W. H. Hammon et al, Fee 1	584	4077
Hanlon & Buchanan, Inc, Fassett-Tuttle 15-G	408	4080
Wichita County—		
W. A. Krohn et al, Jennings 7-A	2	92
W. A. McClure et al, Schlaffke 1	*	462
Wichita County (Wildcat)—		
Coleman & Coppock, J. Hirschi 1	*	1538
Young County—		
Hawley & Smith, E. Watson 1	*	721
Chas. B. King et al, Johnson 13	*	618

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Wildcat)—		
Helmerich-Payne & Atlantic, University 1	172	4475
Andrews County (Emma)—		
Skelly, University 2-F	675	4317
Andrews County (Means)—		
Humble, Means 25	632	4540
Cochran County (Duggan)—		
Magnolia, Mallet 1	909	5038
Crane County (Dune)—		
Wasomes Oil Co., University-Standard 2, sec 6	116	3313
Crane County (Gulf-McElroy)—		
Gulf, J. T. McElroy 221	1389	2905
Crane County (Jordan)—		
Shell, University 5-B	681	3640
Crane County (Sand Hill)—		
American Liberty et al, Tubb 10	†	1352
Crockett County (Todd Deep)—		
Continental et al, Todd 4-B	3480	5795
Crockett County (Soma-Noelke)—		
Moore Explo. Co-Olson Oil Co., Noelke 1	*	1518
Ector County (Foster)—		
Atlantic, Johnson 6-C	856	4210
Barnsdall, Witcher 4	729	4200
M. J. Delaney et al, Johnson 1-B	498	4092
Midland Drl. Co., Henderson-Humble 7	1962	4240
Sinclair Prairie, Gist 2	229	4296
Texas Co., Johnson 1	320	4145
Ector County (Goldsmith)—		
Phillips-Pure, Cowden 94	1303	4150
Ector County (North Cowden)—		
Intercoast Pet. Corp., T. P. Land Trust 3-C	409	4205
Llano Oil Co., Holt 4-B	898	4194
T. P. Coal & Oil Co., Smith 1, Acct. 1	101	4212
Gaines County (Seminole)—		
Atlantic, Riley 1-D	802	5318
Magnolia & Atlantic, H. & J., 8-265	584	5303
Osage Drl. Co., Tippett-Ohio 2-B	861	5305
Hockley County (Slaughter)—		
Stanolind, Slaughter 15-B	891	5030
Howard County—		
Magnolia, ODaniel 1, Sec. 40	*	3750
Pecos County (Tobarg)—		
A. J. Rife et al, Tippett-Conoco 16	42	421
Terry County (Slaughter)—		
Gulf, Mallett L&C Co. 3	1126	5035
Upton County (Gulf-McElroy)—		
Gulf, J. T. McElroy 218	4843	2860
J. T. McElroy 220	1396	2790
Ward County—		
Gulf, E. W. Estes 135	1672	2697
Hutchings 143	41	2665
Mid-Continent Pet. Corp., Sealy-Magnolia 8	1549	3006
Winkler County (Kermit)—		
Illinois Oil Co., McCutcheon-Conoco 8-A	59	3220
Yoakum County (Wasson)—		
Aloco Oil Co., Willard-Texaco 9-B	797	5230
Amon Carter-Continental, Willard 7-38	762	5049
Denver Prod. & Ref. Co., Whittenburg 10-A	1408	5115
Hononiulu Oil Corp., Wilder 13-804	1854	5130
Humble, Wooten 28	998	5205
Osage Drl. Co., Willard-Nelson 2	821	5151
Shell, Baumgart 8-E	1567	5190
Baumgart 11-E	1542	5160
Sun, Lynn 7	666	5133

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
G. Eakin et al, Gaines 2	15	1323
Callahan County—		
Lanning et al, Battle 2	40	1732
McBride et al, Harp 1	*	401
Callahan County (Wildcat)—		
Street et al, Hill 1	*	1290
Thate et al, Fee 1	*	686
Warren et al, Pope 1	*	1847
Comanche County—		
L. H. Choate et al, Shults 1-B	*	600
J. H. Whiteside et al, Anderson 4	*	615
Jones County—		
J. E. Farrell et al, Reid 1-B	*	2574
W. B. Omohundro et al, Gumm-Adams 5	166	1908
Jones County (Wildcats)—		
J. C. Hunter et al, Sayles 1	14	2345
Jones-Stasney-Groover & Rose, Humphrey 1-a	152	1720
Palo Pinto County—		
Adkisson et al, Costello 10	10	1416
Shackelford County (Wildcat)—		
Terry et al, Green 1	*	1020
Taylor County—		
Eastland Oil Co et al, Hunter 2	*	2439
S. & B. Oil Co., Fain 1	406	2398

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Gulf, Wilcox 13	619	7080
Barbers Hill—		
Stanolind, Barber 30 (wo)	207	3857
Texas Gulf, Kirby C-5	504	5369
Bay City—		
Midstates, Parker 1	179	9244
Dickinson—		
Pan American, Stewart 14	123	8631
Esperson—		
General, Moore's Bluff 33	165	2842
Eureka—		
J. Frazier, Hogg 1	140	7720
Fairbanks—		
Amerada, Foley 23	100	6840
Green's Lake—		
Sun, Hughes 9	355	6562
Hillje—		
Texas, Brenner 1	83	5235
Hull—		
Campbell, Palmer 1	206	2993
Gulf, Scarborough 13 (wo)	30	3553
Kubela—		
Texas, Wittig 2	137	4595
League City—		
Phillips, Stewart Title 4	56	11,270
Lovell's Lake—		
Humble, Broussard 21	144	7790
Jefferson Land Co. 12	191	7789
Pickett Ridge—		
Texas Pierce A-38	91	4797
Segno—		
Gordon, Wing A-10	688	8182
South Cotton Lake—		
Humble, Lawrence 3	120	6516
Salt Dome, Lawrence 2	99	6507
Spindletop—		
Sheffield, Row 1 (wo)	14	950
Thompsons—		
Loffland, State 1 (river bed)	852	7914
Quintana, Wolters 17	104	4350
Tomball—		
Humble, Milo 2-B	298	5586
Allman 1	40	5573
Chambers County—		
Sun, Smith 1, Fig Ridge area	80	8853
Fort Bend County—		
Superior and Deep Rock, George 2, Smithers Lake area	*	9574
Harris County—		
W. M. Hobson, Allen 1, Green sur	*	7314
Matagorda County—		
Texas, Pierce 1, Blessing	40	8300
Wharton County—		
Eura B, Hamburger 1, Glen Flora area	*	7508

*Failures; †Junked; ¶Million cu. ft. gas.

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WILDCAT REPORT
New Starts and Completions

CALIFORNIA

FIRST REPORTS

Kern County—A. E. T. Chapman's No. 1, sec. 14-10-23, San Emigdio area, drg.

Sacramento County—Standard's Rio Vista State 1, sec 31-4n-3e, Rio Vista area, rig.

COMPLETIONS

Contra Costa County—Tassajara Oil Corp.'s E. C. Rasmussen 1, bottom 9777 ft, plugged to 5640 ft; top upper Miocene 4200 ft, top Cierbo 6790 ft, top Monterey 9385 ft, abnd.

KANSAS

FIRST REPORTS

Butler County—McDaniel's Eckel 1, nw ne nw 7-27-7e, mach.

Douglas County—Forrester et al's Ice 1, swc se 9-14-19e, dr.

Jefferson County—McLaughlin et al's Frazier 1, csw ne 22-9-18e, mach.

Pratt County—Herndon et al's Montgomery 1, cel sw 13-27-13w, rur.

COMPLETIONS

Cowley County—Murfin et al's Jarvis 1, cnl sw ne 19-31-5e, Wilmot-Floral gas pool, Mississippi 2930 ft, base Mississippi 3298 ft, Arbuckle 3373 ft, hfw 3373 ft, abnd 3376 ft.

Douglas County—Kerlyn Oil Co.'s Whedon 1, cne ne 20-13-20e, 4 mi s Lawrence, abnd 719 ft in Squirrel sd, hfw.

Ellsworth County—Palmer's Stratman 1, ce½ ne sw 15-17-10w, 2 mi sw Stratman pool, Sooy 3290 ft, Arbuckle 3354 ft, abnd 3375 ft.

Greenwood County — Ashlock et al's Lindemood 2-A, ne nw sw 7-25-13e, ½ mi n Gilroy pool, Mississippi 1600 ft, pay 1613-20 ft, acid 2000 gals, 12 bbls.

Marshall County—Frankfort Dr. Co.'s Shearer 1, se nw nw 29-4-9e, sw Frankfort, abnd 822 ft.

McPherson County—Westgate-Greenland Oil Co.'s Lassen 1, csl nw se 24-17-2w, 1¼ mi sw Roxbury pool, Mississippi 2818 ft, so 2818-21 ft, abnd 2859 ft. H. & M. Dr. Co.'s Swenson 1, cs½ sw ne 9-18-4w, 10 mi nw McPherson pool, base Mississippi 3315 ft, Viola 3505 ft, hfw 3605 ft, abnd 3615 ft. Progressive Oil Co.'s Chavez 1, cwl sw nw 26-20-2w, 3 mi s Ritz-Canton pool, Mississippi 2973 ft, abnd 3025 ft.

Russell County—Haynes & Anchutz et al's Driscoll 1, cn½ se sw 30-15-11w, 2½ mi e Dubuque pool, Sooy 3310 ft, Arbuckle 3317 ft, td 3323 ft, 646 bbls 37.2-gr.

NORTH LOUISIANA

COMPLETIONS

Catahoula Parish—Continental Oil Co., Tensas Delta 1, cn½ sw sw 12-9n-7e, elev 61 ft, top lower Cretaceous 8500-50 ft, abnd 9215 ft.

SOUTH LOUISIANA

COMPLETIONS

St. Charles Parish—Amerada's Gheens Realty Co. 4, Bayou Des Allemands, sec 13-15s-20e, Anhydrite 7565 ft, set 5½-inch 7540 ft, flowed 138 bbl 34.5-gr, td 7569 ft.

MICHIGAN

FIRST REPORTS

Allegan County—Merrill & Dean's Raymond 1, nw ne nw 26-2n-16w, rig. R. D. Malcom's Button 1 sw sw sw 14-3n-12w, lcn.

Cass County—Clapsaddle & Harris' Prillwitz 1, nw nw sw 17-5s-16w, dr.

Kent County—Smith Pet. Co.'s Trimm 1, se nw ne 22-5n-10w, dr.

Muskegon County—R. C. Lentz's Anderson 1, nw se nw 36-9n-16w, rig.

Oakland County—Fisher-McCall O. & G., Incl's Moshier 1, sw sw sw 15-5n-9e, rig.

COMPLETIONS

Allegan County—James Ramsey's Rozeboom 1, cw ne nw 15-2n-13w, Traverse 1432 ft, abnd 1481 ft. Fortney Oil Co.'s Minegar 1, ne sw se 24-3n-14w, Traverse 1490 ft, so 1500 ft, abnd 1519 ft.

Calhoun County—D. P. Hyne's Moore 1, sw se se 17-4s-8w, Traverse 1270 ft, abnd 1304 ft.

Cass County—Silver Creek Oil Co.'s Finley 1, nw nw sw 23-5s-16w, Traverse 806 ft, abnd 813 ft; Flynn 2, sw nw nw 23-5s-16w, Traverse 814 ft, abnd 816 ft.

Huron County—Wallace Markle's Johnston 1, se se sw 8-17n-14e, Monroe 2483 ft, pay 2641 ft, td 2652 ft, acidized 1500 gal, pump 26 bbls.

Kent County—Whiteson O. & G. Co.'s Rulason 1, se se ne 17-6n-9w, Traverse 2110 ft, abnd 2147 ft. W. E. Dotson's Nichol 1, se sw sw 20-7n-12w, owdd, Traverse 1915 ft, Dundee 2232 ft, Monroe 2273 ft, abnd 2378 ft. Swanson Con. Oil Co.'s LaQuea 1, se sw se 32-7n-12w, owdd, Traverse 1747 ft, Monroe 2125 ft, abnd 2285 ft.

Montcalm County—Sun's Whitaker 1, ne nw ne 33-11n-8w, Traverse 2761 ft, so 2196 ft, Dundee 3198 ft, abnd 3265 ft.

Ottawa County—Clapsaddle & Harris' City of Holland 1, ne sw ne 29-5n-15w, Traverse 1492 ft, abnd 1508 ft.

Van Buren County—W. R. Borough, Inc.'s Smith 1, nw se sw 25-2s-15w, Traverse 1129 ft, abnd 1136 ft. Merrill & Dean's Harrell 1, nw nw sw 4-1s-15w, Traverse 1166 ft, abnd 1205 ft. Tamblyn Dev. Co.'s Cornish 1, nw ne ne 28-4s-13w, Traverse 1184 ft, abnd 1202 ft. A. G. Hinz's Bray 1, se ne se 25-2s-18w, Traverse 923 ft, abnd 928 ft.

MISSISSIPPI

FIRST REPORTS

Jones County—R. W. Williams (Shreveport), Eastman-Gardner Lbr. Co. 1, ne sw 1-8n-12w, mat.

Madison County—Stanolind O&G Co., C. L. Higgason 1, sw sw 10-11n-5e, mat.

Montgomery County — Columbian Mutual Life Ins. Co., (Memphis, Tenn.), E. R. Henderson 1, se nw se 36-21n-5e, lcn.

COMPLETIONS

Yazoo County—Hill & Hill (Petroleum Bldg. Fort Worth), Montgomery 1, se sw se 24-12n-2e, elev 244 ft, top Wilcox, 1278 ft; top Midway, 3219 ft; top chalk 3948 ft; top Eutaw, 4839 ft; top Wilburn sand, 4893 ft;

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top Tuscaloosa, 5501 ft, dry abnd, td 5700 ft. Exchange Oil Co., T. A. Bennett 1, se se 28-12n-2e, elev 286 ft, top chalk 4205 ft, dry abnd, td 5830 ft, sand and shale.

NEBRASKA

FIRST REPORTS

Richardson County—Campbell & Sparks et al's Horton 1, c ne nw 5-1n-15e, rur, Pawnee Royalty Co.'s Zentner 1, c ne se 8-1n-16e, surf pipe.

NEW MEXICO

FIRST REPORTS

Lea County—Ventura Oil Co. et al's Lowe 1, csw se 26-13s-37e, rur for 6000-ft test.

Rio Arriba County—L. M. Hughes & Continental Oil Co.'s Jacarilla-Apache 1, se ne 22-31n-1w, elev 8100 ft, dr 1550 ft.

COMPLETION

Lea County—Sam Weiner & Stogner's State 1, c se se 30-12s-32e, elev 4382 ft, jkd 1373 ft.

OKLAHOMA

FIRST REPORTS

Lincoln County—Russell et al's Laughlin 1, swc se 35-15n-5e, dr.

Okfuskee County—Haynes et al's McKernan 1,ce½ se nw 25-12n-8e, mim.

Pawnee County—Benedum & Trees' State 1, sw nw nw 13-21n-6e, dr.

Payne County—Burke-Greis' Olson 1, cw½ e½ nw 26-19n-5e, dr.

Pontotoc County—Ramsey Pet. Co.'s Freadwell 1, nec se 2-4n-7e, dr.

COMPLETIONS

Dewey County—Magnolia's Fiekes 1, csw sw 31-18n-14w, 3¼ mi nw Oakwood, Oswego 8320 ft, stuck drill pipe 8400 ft, abnd 9475 ft.

Garvin County—Troup, Moore et al's Bowie 1, nw ne se 3-4n-3e, 3 mi s Bvars pool, Hunton 2692 ft, Viola 2792 ft, Trenton 2875 ft, abnd 3363 ft.

Kiowa County—Curtis et al's Hunsinger 1, nw sw se 17-5n-15w, 10 mi se Komalty area, Granite 120 ft, abnd 600 ft, Curtiss et al's Hobbs 1-A, sec nw 35-6n-17w, 8 mi se Hobart, sg 567-68 ft, abnd 620 ft.

Lincoln County—Anderson-Prichard's Smith 1, se sw ne 18-14n-5e, s Kendrick pool, Oswego 3477 ft, Prue 3508 ft, Mayes 4115 ft, Woodford 4245 ft, Hunton 4278 ft, Sylvan 4330 ft, Viola 4417 ft, first Wilcox 4480 ft, second Wilcox 4514 ft, td 4530 ft, abnd 4538 ft, Fields & Nagle's Alspaugh 1, sw se ne 35-15n-6e, 1 mi n Stroud pool, Layton 1960, Checkerboard 2167 ft, Cleveland 2219 ft, Oswego 3009 ft, Prue 3068 ft, abnd 3150 ft.

Seminole County—Davis' Keys 1, nec se 4-11n-8e, 1¼ mi w Dill pool, Calvin 2075 ft, Cromwell 3612 ft, Miss. Caney 3742 ft, Mayes 4010 ft, Woodford 4140 ft, Hunton 4164 ft, abnd 4243 ft.

Stephens County—Jackson's Marshall 1, se ne ne 1-1s-6w, 1 mi sw Cruce pool, abnd 2575 ft in shale.

EAST TEXAS

FIRST REPORTS

Freestone County—L. F. Gray et al's O. B. Utley 1, 467 ft out of nec 323-ac tr, S. J. Claypool sur 134, 4 mi n Fairfield, lcn.

Henderson County—Bill LaRue, Richards & Holloway's Cora Rogers 1, 330 ft out of swc 100-ac tr and Alex de la Garcia sur, 6 mi nw Athens, rig.

Shelby County—Shell Oil Co., & Union Prod. Co., Garrett 1, William Moody sur, lcn.

COMPLETION

Kaufman County—Ed Bateman & DeArman's Gen'l American Life 1, 7000 ft from w and 2900 ft from n lines J. Baker sur, 6 mi w Mabank, elev 314 ft, Pecan chalk 1361-1454 ft, Austin chalk 2148-2569 ft, abnd in Woodbine 2944-3036 ft.

TEXAS GULF COAST

COMPLETIONS

Chambers County—Sun's Smith 1, Fig Ridge area, T&NO sur, 3 mi n Seabreeze fld, flowed 80 bbls, 37.4-gr oil ⅛-in choke, perf 8849-53 ft.

Fort Bend County—Superior and Deep Rock's George 2, bank Smithers Lake, Kelker sur, abnd 9574 ft.

Harris County—W. M. Hobson's Allen 1, Charleston Gardens subd, Green sur, Heterostegina 3553 ft, Textularia Warreni 5263 ft, Hockleyensis 5864 ft, Cockfield 6728 ft, abnd 6728 ft.

Matagorda County—Texas' Pierce 1, Blessing area, H&GN sur 1, ab 209, flowed 40 bbls 56-gr dist, 1,200,000 cu ft gas ⅛-in ch, perf 8290-8360 ft.

Wharton County—R. F. Garland's (Eura B. Oil Co.) Hamburger 1, Glen Flora area, WCRR sur 65, Cockfield 7390 ft, g/sds in Jackson 5859 and 6217 ft, elec log, abnd 7508 ft.

WEST TEXAS

FIRST REPORTS

Sutton County—W. M. Lyles & L. H. Dunn's Wyatt-Cities Service 1, nec TWNG sec 4, blk 6, lcn for Ordovician test.

Ward County—Sinclair Prairie's Wirt Davis 1, north cor w¼ H&TC sec 32, blk 4, lcn.

COMPLETIONS

Andrews County—Helmerich-Payne & Atlantic Ref. Co.'s University 1, c ne ne sec 11, blk 11, elev 3302 ft, top anhydrite 1460 ft, top salt 1586 ft, top Yates 2730 ft, top solid lime 4020 ft, shot and acidized broken pay 4260-4475 ft, pumped 172 bbls 37.6-gr oil initial.

NORTH TEXAS

COMPLETIONS

Archer County—L. T. Burns et al's T. L. Blewitt-First Nat'l Bank (Olney)-Shell 1, NEc S.P.Ry Sec. 2, A-1253, sand 1462-68 ft shale to 1471 ft, shot 10 qts nitro 1464-68 ft, pumped 10 bbls.

Clay County—Wirt Franklin-W. B. Omohundro et al's Staggs 1, 640 ft from sand 900 ft from w lines blk 34, Angelina CSL sur, top Bend lime 5872 ft, abnd in Ellenburger 6645-6769 ft.

Wichita County—Coleman & Coppock's J. Hirschi 1, 1985 ft from n and 750 ft from w lines GC&SF sur A-364, abnd 1538 ft.

Young County—W. R. Stafford et al's King-Wooten 1, nwc TE&L sec 288, abnd 704 ft.

FIRST REPORT

Clay County—Bridwell Oil Co.'s Edrington 13, 1228 ft from n and 2579 ft from e lines HT&B sec 35, A-759, sp on 1700-ft test.

WEST CENTRAL TEXAS

FIRST REPORTS

Callahan County—W. B. Hinton et al's Gilliland 1, near c sw ne BBB&C sec 147, dr 355 ft.

Coleman County—R. H. Murray et al's Norris 1, swc ne 160-ac tr, J. Greenwood sur A-304, lcn for 4000-ft test.

Comanche County—C. D. Lane et al's Strout 1, E. D. Corbitt sur A-154, mach for 3100-ft test.

Jones County—R. B. Farris et al's Guitar 17, nw se nw T&P sec 44, blk 15, sp on 3700-ft test for Guitar pool, Mike Kadane et al's Jap Spraberry 1, nw sw sw S.P. Ry. sec 11, blk 2, sp.

Palo Pinto County—F. Guyer, tr's Gauldin 1, L. B. Dayton sur A-153, dr 1775 ft.

COMPLETIONS

Callahan County—W. H. Street et al's Hill 1, John Gillespie sur 340, abnd 1290 ft. E. E. Thate et al's Fee 1, sec 203, Victorian CSL sur, abnd 686 ft. L. A. Warren et al's Pope 1, nwc of Cade K. Loggins sur, sec 12, A-268, abnd 1847 ft.

Jones County—J. C. Hunter et al's Sayles 1, sec n½ subdiv 8, Robt. Smith sur 192, used 1000 gals acid at 2338-45 ft, pumped 14 bbls oil and 178 bbls water initial. Jones-Stasney-Groover & Rose's Humphrey 1-A, sec sw BBB&C sec 192, pay 1709-20 ft, p&f 152 bbls initial.

Shackelford County—L. R. Terry et al's Green 1, nwc s½ ne T&P sec 64, blk 12, abnd 1020 ft.

SOUTH TEXAS

FIRST REPORTS

Bexar County—Roger Putnam et al's Connaway 2, 150 ac tr, John H. Lueas Sur 54, 3 mi ne Eckert fld, dr 45 ft.

McMullen County—Texas Co.'s La Chusa 1, A. B. & M. Sur 45, 18 mi s Tilden, mir.

San Patricio County—Norsworthy Prod. Co.'s T. A. McKamey 1, blk 17, Gregory Farm bly "E" sur 11, 3 mi ne Midway fld, lcn.

Starr County—Borsodi Pet. Co.'s Vela 1, Sh 2-A, Por 92, 4000 ft, (Sun farmout), lcn. Complete Oil Well Service Co.'s Yzaguirre 1, Sur 227, 1 mi e Rincon fld, prep sp. T. E. Stephens' H. P. Guerra 3, 1482 ft n line, 460 ft w line, Sh 270, Por 69, lcn.

Willacy County—Pan American Prod. Co. et al's P. Garcia 1, 145 ac tr, Sh 13, San Juan de Carricitos Gr, 6 mi se Willamar, mir.

Williamson County—J. G. Hodges' Adamek 1, 89 ac tr, E. Reador Sur 35, 5 mi s Taylor, dr 400 ft. Jackson et al's Wittliff 1, 259 ac tr, Wm. Lancey Sur 6, 7 mi s Taylor, dr 320 ft.

Wilson County—E. E. Young et al's O. D. Means 1, C. W. Parrott Sur, 45 ft se No. 1, dr 1798 ft.

Zapata County—Hagen & Stewart's F. G.

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Martinez 1, 467 ft ne and nw lines, blk 23, sh 1, El Grullo, gr, lcn.

COMPLETIONS

Bexar County—Roger Putnam et al's Connaway 1, 150 ac tr, John Lucas Sur 54, 3 mi ne Eckert fld, abnd 855 ft.

Duval County—Bridwell Oil Co.'s Rogers Est. A-1, J. Poitevent Sur 21, 3 mi sw Fitzsimmons fld, td 4327 ft, com 122 bpd, 3/16-inch ch, perf 4323-25, 9 shots.

Guadalupe County—Lavernia Lumber Co.'s W. V. Boeck 1, John Christopher Sur, 1 mi s Elm Creek fld, abnd 1508 ft.

Jackson County—John Mayo & Kirkpatricks' Tucker 2, lot 6, McCrory subd, Ramon Musquez Gr, 1 mi nw Vanderbilt townsite, abnd 7010 ft.

Jim Wells County—Henshaw Brothers' L. P. Allen 1, lot 3, blk B, W. H. Bode subd, Casa Blanca gr, 2 mi n Wade City fld, abnd 5208 ft.

Nueces County—Humble's Humble-State 1, State Tract 723, Nueces Bay, 2½ mi s East White Point fld, td 5200 ft, 165,000 cu ft gas per day, perf 3974-90 ft. Pure's Little 1, Samuel Ward Sur 194, 5 mi s Port Aransas, abnd 8957 ft.

Starr County—A. A. Kelley's Gonzales A-1, Sh 62, por 70, abnd 508 ft.

Webb County—Cecil Hagen's Despain 1, CCSD & RGNG Sur 7, blk 2, abnd 2308 ft.

Michigan

[*Continued from page 65*]

Fortney Oil Company abandoned Minegar 1, section 24-3s-14w, Heath Township, Allegan County, after a 10-day test. It pumped about five barrels, after acid, from Traverse at 1519 feet. It had held discovery promise.

Twin Drilling Company's Methner 1, NW SW NE 33-16n-3w, a mile south of Dundee oil production in the Wise pool, Isabella County, developed 1,041,600 feet of gas in Stray sand at 1254-58 feet and was reported running well up on the Marshall-Red marker. It will be carried to the 3700-foot Dundee zone for an oil test. The semi-wildcat bids to draw interest for another reason. An attempt will be made to drill to the 3700-foot zone with rotary. The company has been active in Michigan for the past year, identified chiefly with rotary drilling in the 1700-foot zone at Grand Rapids and to 1500 feet in the Wise pool, where casing is set and completion made with cable tools.

Wallace Markle's Johnston 1, section 8-17n-14e, Huron County wildcat under test for four weeks, was completed for a 26-barrel pumper in Monroe at 2652 feet. No new locations have been reported. The 26-barrel gauge was made after series of acid treatments, 1500 gallons in all.

C. W. Teater's Domokos 9, Section 11-18n-1w, Buckeye field, Gladwin County, first 5-spot location in a 10-acre spaced field, showed only an outside chance of making a commercial well. It filled up 240 feet in 8 hours natural at 3636 feet, bottom hole, but after 48 hours had not recovered treating acid on swab tests.

Rinehart & Hickoks' Au Sable 1, Section 34-30n-3w, Otsego County, farthest north drilling wildcat in Michigan, gauged 200,000 feet of gas in the Antrim shale at 1415-1623 feet. It will be carried to around 3000 feet.

First deep tests in the Walker field, Kent County, where the deepest known oil zone is the Traverse at 1700-1900 feet, were junked. Swanson Consolidated Oil Company carried LaQuea 1, Section 32-7n-12w, and W. E. Dotson took Nichol 1, Section 20-7n-12w, into the Monroe to about 2300 feet. Samples showed some saturation in the LaQuea.

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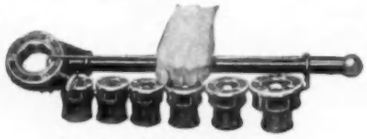
NOTES FOR THE Equipment Buyer and User

Threaders

THE RIDGE TOOL COMPANY

Three new ratchet and 3-way threaders for small pipe have been announced by The Ridge Tool Company, Elyria, Ohio.

Nos. OOR, OR and 11R are of all-steel malleable alloy and thread ⅛- to



No. OR and 11R RIDGID Ratchet Threaders for ⅛" to 1¼" pipe.

No. 30-A and 31-A 3-way Ratchet Threaders for ⅛" to 1" pipe.

1¼-inch pipe. Separate sets of semi-high-speed tool steel chaser dies may be removed for regrinding. In No. OOR, die heads are locked in or removed by a pull of the ratchet knob. In Nos. OR and 11R, die heads push out for changing. The tool is designed so no special dies are needed for threading pipe close to wall as it is only necessary to turn dies upside-down and shift to positions marked on die-heads. A carrier which holds the ratchet ring and set of dies is supplied with all complete sets.

The Nos. 30A and 31A 3-way threaders for small pipe have virtually the same features. They have double ball-end handles and thread pipe from ⅛- to 1-inch.

Gaskets

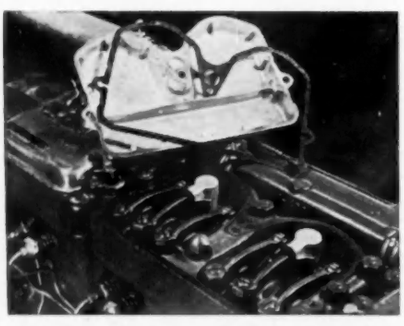
VICTOR MANUFACTURING & GASKET COMPANY

A gasket embodying in combination properties of asbestos and neoprene has been introduced by Victor Manufacturing & Gasket Company, Detroit. In manufacture, the gaskets are blanked from asbestos sheet material and then coated with neoprene cement developed especially to increase its resistance to passage of gases and liquids.

Two types are available. As originally made, the sheet has considerable compressibility, and gaskets made from it are adapted to joints where relatively light flange pressure is applied, as between light metal stampings. They are applied where heretofore treated paper, cork or similar materials have been used. They are designed for stability of dimensions and resistance to effects of relatively high temperatures that cause other materials to develop leaks.

A second type of gasket is obtained by compressing the asbestos-neoprene combination. They are designed for use where heavier flange pressures may be applied, as between machined surfaces.

In the presence of oils, motor fuels, and water, the gaskets are described as non-corrosive to steel, copper, brass, aluminum and magnesium alloys.



Asbestos-Neoprene Gasket on Valve Rocker Cover of a Diesel Engine.

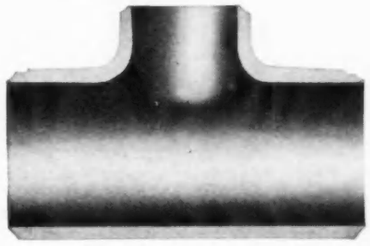
Welding Tee

TUBE-TURNS, INC.

A new line of seamless steel welding tees, designed to provide full pipe strength through proper placing of metal at points of higher stress rather than by excess thickness throughout, has been designed by Tube-Turns, Inc., Louisville, Kentucky.

The tee provides more metal thickness at the crotch an dthe thickness from that point, along the top centerline of the run of the tee, is gradually reduced to nominal at the bottom of the tee where stresses, when reinforcement at more highly stressed points is ample, again reach normal.

Long outlets are provided for greater ease in lining up and welding, and the tees are described as accurately machined, scale-free and stress-relieved.



Tube-Turns' Welding Tee.

Gas Lift

McEVOY COMPANY

A new gas-lift system, consisting of a series of valves installed at intervals in the tubing string to admit gas into the tubing at the lowest possible point to realize the greatest lifting efficiency from induced gas, has been announced by McEvoy Company, Houston. It has been tried in the field during the past two years.

The system is designed to permit wider spacing with resultant lower installation cost, to lift from upper valve until such time that lower valve is uncovered and in operation to make for simplified installation, to operate on balanced fluid columns, to simplify the action of and setting of valves, to permit use of a diaphragm instead of

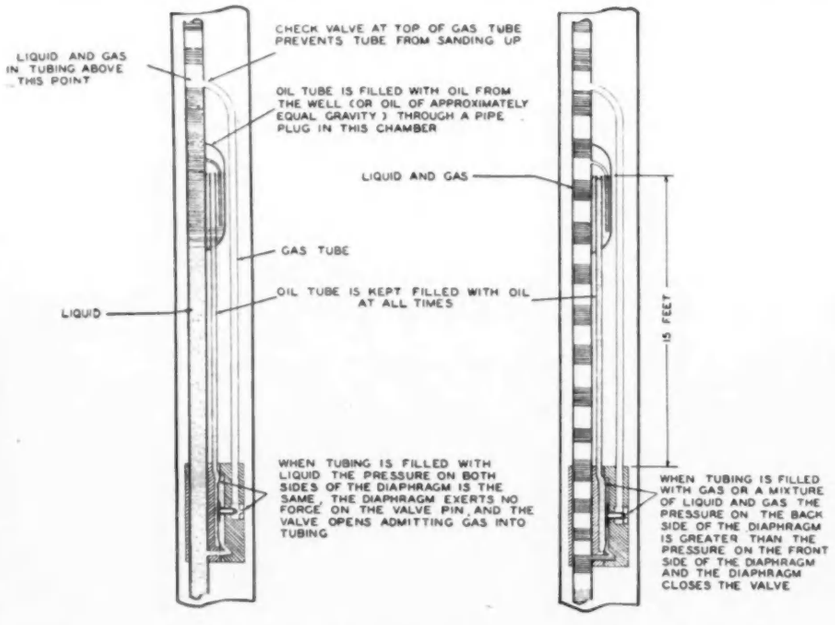
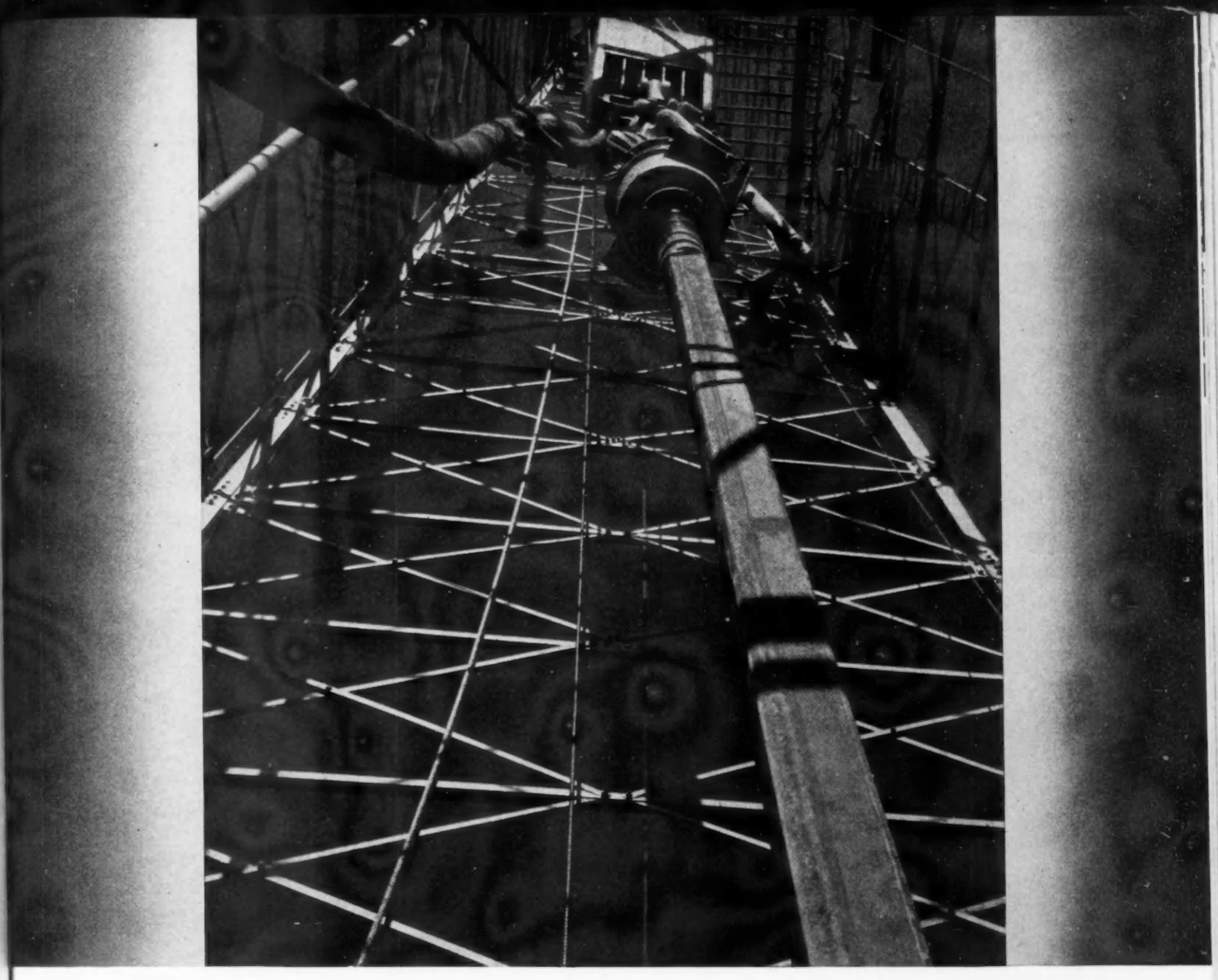

LIQUID AND GAS IN TUBING ABOVE THIS POINT
CHECK VALVE AT TOP OF GAS TUBE PREVENTS TUBE FROM SANDING UP
OIL TUBE IS FILLED WITH OIL FROM THE WELL (OR OIL OF APPROXIMATELY EQUAL GRAVITY) THROUGH A PIPE PLUG IN THIS CHAMBER
LIQUID AND GAS
GAS TUBE
OIL TUBE IS KEPT FILLED WITH OIL AT ALL TIMES
LIQUID
15 FEET
WHEN TUBING IS FILLED WITH LIQUID THE PRESSURE ON BOTH SIDES OF THE DIAPHRAGM IS THE SAME, THE DIAPHRAGM EXERTS NO FORCE ON THE VALVE PIN, AND THE VALVE OPENS ADMITTING GAS INTO TUBING
WHEN TUBING IS FILLED WITH GAS OR A MIXTURE OF LIQUID AND GAS THE PRESSURE ON THE BACK SIDE OF THE DIAPHRAGM IS GREATER THAN THE PRESSURE ON THE FRONT SIDE OF THE DIAPHRAGM AND THE DIAPHRAGM CLOSES THE VALVE
FIG. 1
FIG. 2

Diagram Showing Operation of McEvoy's Gas Lift Flow-Valve System



"SNAP THE WHIP" IS NO GAME FOR THE KELLY

When a Kelly bar gets a permanent crook or bend there's little to be done except to take it out of service and straighten it.

Consequently it pays to make certain that the Kelly will stand up to its work without going out of true.

Chromium-Molybdenum (SAE 4140) Steel is making good in Kelly bar service. It has high tensile strength, with uniform properties throughout the mass, and the hardness needed to stand rough usage and to resist abrasion from mud passing through the bore.

Furthermore, because of the relatively high yield point of Chrome-Moly (SAE 4140), a Kelly bar made of it can be loaded nearer the tensile strength limit without danger of taking a permanent bend.

This is only one of the Molybdenum steels which are serving so effectively in the oil fields. They are all described in our technical book, "Molybdenum Steels in Oil Production", which will be sent free on request.

PRODUCERS OF MOLYBDENUM BRIQUETTES, FERRO-MOLYBDENUM, AND CALCIUM MOLYBDATE

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HAS NOTHING TO SELL BUT
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...expert service on the design and manufacture of mechanical rubber goods and synthetic oil-resisting products.

If you have a problem in rubber to be solved, bring it to us . . . our field is the oil field equipment manufacturer.

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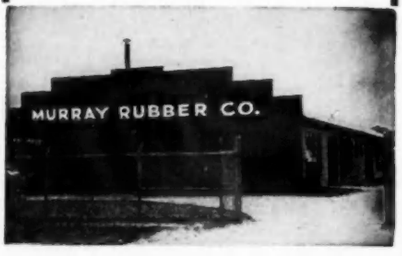
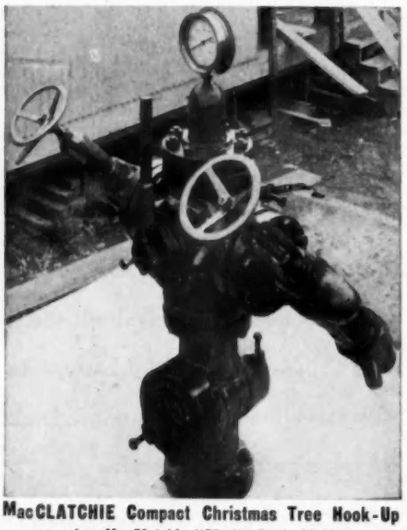




MacCLATCHIE Compact Christmas Tree Hook-Up

. . . uses two MacClatchie "Plastic Packed" Hydro-Seal Plug Valves, (3" or 4") . . . and two MacClatchie Adjustable Flow Beans. 3-point construction of top valve allows flow through EITHER or BOTH beans, or complete shut-off, MERELY BY ROTATING PLUG IN DIFFERENT DIRECTIONS! Full diameter round opening top to bottom for running swabs, light tools, etc., without removing tree from well head. Both valves "Plastic Packed" and lubricated with "Lubricheck" to assure easy turning, repacking and lubricating under pressure WITHOUT CLOSING THE LINE. Bean openings adjustable 1/64" to 1" volume area through venturi tube . . . larger sizes available. Unit easily shipped set up as shown . . . is compact (conserving space) and can be installed on tubing or casing head in a few minutes. Factory tested to 6000 lbs. Working pressure, 3000 lbs. Send TODAY for Complete Information!

MacCLATCHIE MANUFACTURING CO.
COMPTON, CALIFORNIA
Mid-Continent Distributor, HAKE TOOL COMPANY, Houston, Texas
Rocky Mountain Representative, E. C. DILGARD, Casper, Wyoming
Foreign, GEORGE E. WOODS, 17 Battery Place, New York, N. Y.

NOTES FOR THE Equipment Buyer and User

springs, and to operate independently of the input gas pressure.

All of the valve mechanism is mounted on the outside of the tubing to leave a streamlined passage through the tubing and permit running a bottom-hole pressure bomb or instruments in the well. The valve is actuated by a column of fluid in a tube on the outside of the tubing. The fluid column acts against a diaphragm which is integral with the valve proper. The valve controls admission of gas from the annular space into the well tubing. The column of fluid is balanced by the column of oil-well fluid of equal length in the tubing, acting against the opposite side of the diaphragm. Gas admitted by the valve enters the well tubing above these columns so as not to interfere with operation of the valve. The fluid in the column on the outside of the tubing is oil from the well that has been poured into the valve at the time it was run into the well.

The valve will be in the open position and admit gas into the tubing so long as the well fluid in the tubing opposite the valve is dead and needs induced gas to flow it from the well. Should gas be induced from below this valve either by uncovering the next lower valve or by formation gas coming with the produced fluid, the valve will close, due to unbalanced fluid columns.

Float Switch
GENERAL ELECTRIC COMPANY

A new float switch designed for domestic sump-pump control has been announced by General Electric Company, Schenectady, New York. It is a single-pole switch employing an over-center toggle mechanism. Float-rod weight is counterbalanced by a calibrated spring acting on the operating lever.

Corrosion-resistant parts in the mechanism are intended to permit operation under severe moisture conditions. Other features include accessible terminals for easy wiring, a dummy terminal to provide convenient wiring of the through side of the line, fine-silver contact tips and snap-action mechanism.

Paint

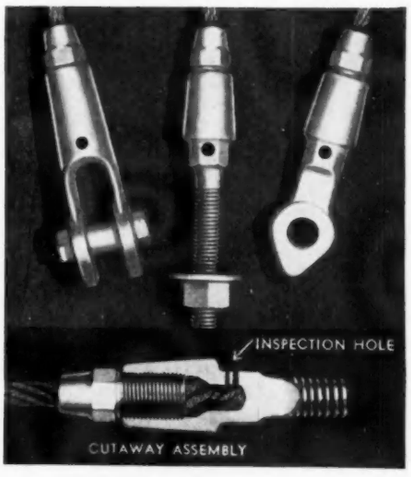
E. I. du Pont de Nemours & Company, Wilmington, Delaware, has issued a 16-page booklet on "Dulux White for Tanks." The material is described as capable of reducing the temperature in a tank below that of a tank painted with other finishes, as maintaining heat-reflecting powers after weathering, and as providing annual average savings that justify its use when applied to storage tanks for volatile materials.

Gauge Valves

The Reliance Gauge Column Company, 5902 Carnegie Avenue, Cleveland, has issued Bulletin 401 describing its complete line of boiler water-gauge valves, including types for low- and high-pressure equipment, and certain boiler gauge specialties.

Wire-Rope Connector
ELECTROLINE COMPANY

A wire-rope connector of vibration-damping design, styled to grip the cable with graduated compression, feathering off from maximum at the rear to zero at the front to prevent weak-point crystallization at the point of connection and insure longer rope life, has been announced by Electroline Company, 4015 South LaSalle Street, Chicago.



Electroline-Fiege Connector

Designated Electroline-Fiege connector, the device is an assembly of three units: a sleeve which slips over the end of the wire rope, a tapered plug which is inserted to separate and hold the strands of wire in the sleeve, and a covering socket to lock the cable. Installation may be made with ordinary mechanic's tools, and no hot metal is required. An inspection hole enables the workman to see the perfection of the twist joint, with complete bond between cable, tapered plug and sleeve.

The connector is available in black, hot-galvanized and cadmium-plated finishes for rope sizes of ¼-inch and larger. For sizes ½-inch and smaller, it is also available in bronze, stainless steel and monel metal.

Trencher
THE BUCKEYE TRACTION DITCHER COMPANY

Addition of Model 12A to its line of rotary-wheel type trenchers has been announced by The Buckeye Traction Ditcher Company, Findlay, Ohio. The machine cuts trench up to 26 inches wide and 5½ feet deep.

The excavator wheel frame is of trussed-bridge construction to provide greater strength and resistance to distortion. A fluid coupling, offered as optional equipment, is designed to protect transmissions from sudden shocks and prevent engine stalling.

The conveyor belt has a new type of belt guide clips to insure even tracking

NOTES FOR THE Equipment Buyer and User

Buckeye Traction Ditcher's Model 12A

of the belt and minimize belt and pulley wear. A constant-center type final drive is provided to eliminate need for idlers to take up the chain slack and provide a smooth flow of power at any digging depth of the excavator wheel.

The unit is 6 feet, 8 inches wide, exclusive of spoil conveyor, and its overall digging height is 8 feet, 1¼ inches. It features a range of cutting feeds, conveyor belt speeds and travel speeds for all types of work.

J. R. McNeill has been appointed sales representative for Universal Atlas Cement Company in Oklahoma, Kansas and Arkansas. He has established an office at 1147 South Quaker, Tulsa.

For

TIGHT NUT FASTENINGS

. . . Specify Elastic Stops on new equipment.

. . . Replace worn common nuts with Elastic Stops.

The harder the service, the tighter they hold

Get them from your supply house... Factory stocks in Houston and Los Angeles

● *Write for Catalog*

ELASTIC STOP NUT CORPORATION
2320A VAUXHALL ROAD · UNION, NEW JERSEY

Elastic Stop SELF-LOCKING NUTS

Valve

MANNING, MAXWELL & MOORE, INC.

A 600-pound standard steel valve, designated Hancock Duravalve Junior and featuring a Stellite seat welded integral to the body, has been anannounced by Manning, Maxwell & Moore, Inc., Hancock Valve Division, Bridgeport, Connecticut.

The integral seat construction is designed to eliminate chance of leakage between seat ring and body as there are no threads to leak. The valve disc is heavily Stellited to resist wire-drawing and wear. The body and bonnet are

Hancock Duravalve Junior

of carbon Molybdenum steel, giving a temperature rating of 950° F. at 600 pounds steam pressure.

The valve is available in sizes ¼- to 1-inch, in the globe type, with either screwed or socket welding ends.

Medart Purchases Reeves Wood Pulley Stock

The Medart Company, Potomac & DeKalb streets, St. Louis, has purchased the wood pulley stock of Reeves Pulley Company, Columbus, Indiana. The latter company has discontinued manufacturing and marketing of wood split pulleys, and its wood pulley dealers and customers will henceforth be served by The Medart Company.

Personnel Changes Announced By Allegheny Ludlum Steel

Several sales and plant personnel changes were announced last month by Allegheny Ludlum Steel Corporation, Pittsburgh.

Truman B. Brown has been named manager of Ludlite sales, with headquarters at Watervliet, New York.

C. B. Boyne, manager of stainless bar and wire sales, has been named manager of stainless sales, and will maintain his headquarters at Pittsburgh. He is succeeded by J. R. Kumer, Jr.,

Save Money, Labor, Time

with a

BREWSTER
***Wire-Line* CORE BARREL**

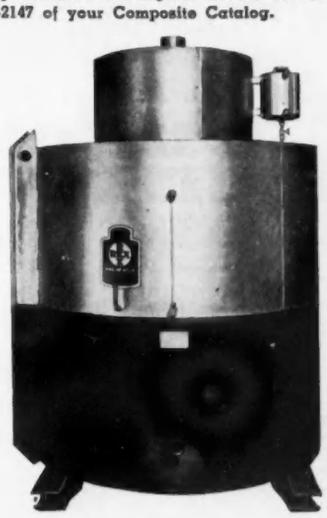
You retrieve your core through the drill stem on a wire line in 30 or 40 minutes. Regular model takes 42" core, other models take cores up to 8 feet in length. Drag bit head (2 or 3 blade) and core cutter head dressed with Tungsten Carbide Hard Metal. Buy one of these barrels outright and provide your rig with the most economical and satisfactory coring method known. Prices on request.

The BREWSTER CO., Inc.
Phone 2-3181 Shreveport, La.
New Iberia - Houma

REX PRE-HEATER

QUICKER, CHEAPER STEAM!

Pre-heats boiler feed water to near boiling point, thus providing an abundance of quick, cheap steam. For complete details see Pages 2146-2147 of your Composite Catalog.



THE REX COMPANY
P. O. BOX 2431 HOUSTON, TEXAS
Mid-Continent Distributor:
The Continental Supply Co.
California Distributor: The Howard Supply Co.

CORE AND SHOT HOLE DRILLING CONTRACTORS

"For Better Cores" . . . see Failing . . . Experienced operators and improved equipment save you money on all types of exploration drilling . . . oil, sulphur, and other minerals.

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3611 CALHOUN ROAD
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TIN END ENVELOPES for Sand Samples

Made of strong kraft paper, tightly sealed to eliminate leaks. Top end folds over with easy twist and holds contents securely. Most economical for sending and filing of sand samples. Phone, write or wire for our low prices.

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HOUSTON, TEXAS

Standco NO-SMOKE
STANDCO BRAKE LINING
nothing novel—no bunk—but it gets the job done without scoring brake rims. See page 2100 Composite Catalog.
Standco Brake Lining Co.
HOUSTON

OIL BOOKS
The knowledge gained through years of work and study by some of the most capable men in the oil industry is set down in the various oil books published and sold by the Gulf Publishing Company. Catalog of these books furnished upon request.
THE GULF PUBLISHING COMPANY
P. O. Box 2811 Houston, Texas

NOTES FOR THE Equipment Buyer and User

former assistant manager of stainless bar and wire sales.

Deane Murphy, of the New York sales office, has been named eastern manager of flat-rolled carbon steel sales, while C. R. Mitchell, Jr., has been named assistant district manager of sales for the New York office.

John Shillinglaw has been named purchasing agent for the company's plant at Watervliet, New York.

Murray-Baker-Frederic, Inc., New Orleans, has been named agent for the company's tool steels in the area comprising Louisiana, the larger portion of East Texas and South Arkansas.

Erle P. Halliburton Renamed Head of Oil Well Cementing

Erle P. Halliburton has been re-elected president of Halliburton Oil Well Cementing Company, Duncan, Oklahoma. Logan D. Campbell was named secretary-treasurer to succeed Hugh Leonard, who resigned due to ill health.

John C. Halliburton, Claude P. Parsons, A. D. Stoddard and Jay Taylor were named vice presidents.

Directors are Erle Halliburton and Ben F. Saye, of Duncan; John R. Suman and W. B. Pyron, of Houston; John G. Pew, L. S. Sinclair and Wirt Davis, of Dallas.

Woodman Special Representative for Roller-Smith Company

W. R. Swoish, sales manager for Roller - Smith Company, Bethlehem, Pennsylvania, has announced the appointment of B. S. Woodman as a special representative in sales engineering.

Woodman formerly was associated with Wagner Electric Corporation as special representative and branch manager of the Philadelphia territory.

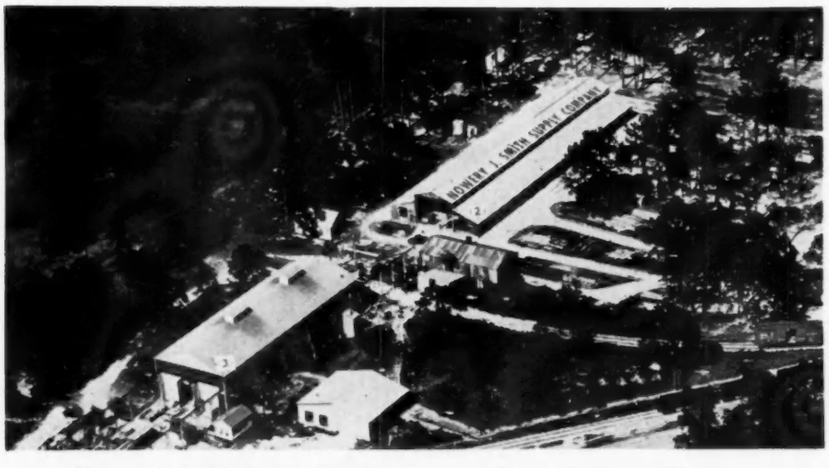
Nowery J. Smith Company in New Houston Headquarters

Nowery J. Smith Company has established a new plant and office on a 5-acre tract at 6716 Eureka Street, Houston.

FRANK CHAMPION
Vice president of Byron Jackson Company, Houston, recently was elected president of the Texas Trapshooters Association.

Grounds around the plant have been converted into a park and include a stable and riding paths.

The company is installing equipment for manufacture of Panelbuilt steel houses of Tennessee Coal, Iron & Railroad Company, which will be an addition to the company's present line of bolted and welded tanks, separators, gas-distillate heaters and derricks.



Nowrey J. Smith Supply Company's new office and plant at Houston.

W. S. Proctor to Represent O-C-T in California

Oil Center Tool Company, Houston, has appointed W. S. Proctor as factory representative in California. For 14 years before joining the company, Proctor was engaged in oil field equipment sales work in the Gulf Coast and Mid-Continent areas. He has established residence and offices in Santa Ana, California.

W. S. Proctor

Eastman Oil Well Survey Advances Collins and Pabst

H. John Eastman of Eastman Oil Well Survey Company, has announced two promotions.

C. Philip Collins, who has been manager of the Gulf Coast office, has been named assistant general manager and transferred to Dallas to assist Ray F. Bolton in Gulf Coast, Mid-Continent and Eastern fields.

Al G. Pabst, formerly in the Dallas office, has been named manager at Houston to succeed Collins.

C. P. Collins

S. Sloan Colt Elected General Electric Director

S. Sloan Colt has been elected a director of the General Electric Company, succeeding Seward Prosser, resigned. Colt, graduated from Yale University in 1914, is well known in banking circles, having been a vice president of the Farmers Loan & Trust Company, a vice president of National City Bank and the Bankers Trust Company, and president of the latter organization since 1931. He is a director of various industrial and insurance companies.

Bridgeport Machine Company Opens First Nebraska Store

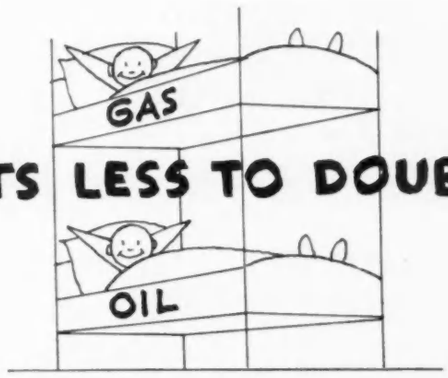
The first oil field store for Nebraska has been opened by Bridgeport Machine Company at Falls City to serve operators in the Forest City Basin. It is giving 24-hour service, and is being manned by supply men transferred from Illinois and Kansas.

Metal Turning

Gisholt Machine Company, Madison, Wisconsin, has issued Performance Data Sheets 46 to 49 giving case studies of late production methods in metal turning operations using the company's turret lathes and automatic lathes.

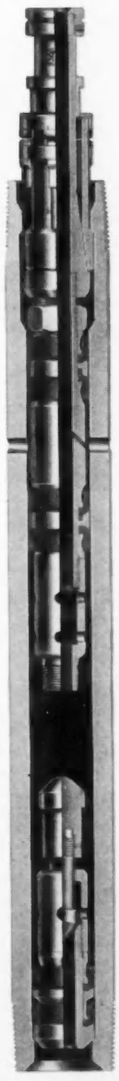
Rubber Putty

The B. F. Goodrich Company, Akron, Ohio, has issued a new catalog section on its line of Plastikon rubber putty, a product described as retain-



IT COSTS LESS TO DOUBLE UP

PRODUCE FROM 2 FORMATIONS SIMULTANEOUSLY; LET OTIS SIDE DOOR CHOKE USE CASED-OFF GAS TO FLOW YOUR WELL



If your well has a cased-off gas sand with a low-pressure underlying pay horizon, then *double-up* on the producing levels. Let the Otis Side Door Choke enable you to use that idle gas pressure to flow your well. The State of Texas is the latest to approve this method of producing from two horizons in the same well.

Compare the low-cost Otis Side Door Choke method of stimulating natural flow with the high-cost of pumping or artificial lift. Eliminated are expensive pumps, sucker rods and power for pumping; compressors for gas/air lift or gas drive. Supervision and maintenance costs are cut to a minimum. Each well is handled as an individual unit.

Besides flowing your sluggish well, the Otis Side Door Choke conserves the gas supply, prolongs the producing life of the well, increases percentage of recovery and retards water encroachment. The Side Door Choke has also been used to raise the gravity of the oil in a number of fields.

Choke, check valve and landing nipple, at left, are made up in the tubing; gas enters through ports and side-door orifice. Choke can be run and pulled under pressure on a measuring line without disturbing tubing or casing.

Write or call nearest Otis office for additional information.

OTIS "Don't Kill Your Well" Call OTIS

OTIS PRESSURE CONTROL, INC.

DALLAS, TEXAS

Division Offices: Houston, Oklahoma City, Hobbs
Export Office: 74 Trinity Place, New York, New York, U.S.A.
Representatives: Otis Eastern Service, Inc., Wellsville, N. Y.
Western Pressure Control, Inc., Los Angeles, Calif.

NOTES FOR THE Equipment Buyer and User

ing a degree of plasticity for long periods, as not hardening, drying out or cracking, as having great resistance to deteriorating effects of corrosive chemicals, chemical fumes and salt spray, and as adhering strongly and permanently to wood, steel and glass despite action of sunlight, vibration or presence of corrosive chemicals and fumes.

Safety Clothing

Industrial Gloves Company, 900 Garfield Boulevard, Danville, Illinois, has issued a new 20-page catalog on its line of steel-grip safety clothing. It illustrates gloves, mitts, finger guards, hand pads, sleeves, arm protectors, aprons, leggings, spats and welder's protective equipment.

Pump Motors

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, has issued Leaflet F-8551 describing its type FR repulsion-start induction-run gasoline-line pump motors. The AC single-phase fractional horsepower motor is explosion proof, has high-starting torque, and carries Underwriters Laboratories approval for use in Class I, Group D hazardous locations.

Creep of Alloy Steel

The Babcock & Wilcox Tube Company, 19 Rector Street, New York, has issued Bulletin 3-266, an article giving the results of an investigation of the effect on creep strength in increasing the molybdenum content of steel of the 5 percent chromium, 0.45-0.65 percent molybdenum type.

Oil City Brass Works Names Edkin for Oklahoma and Kansas

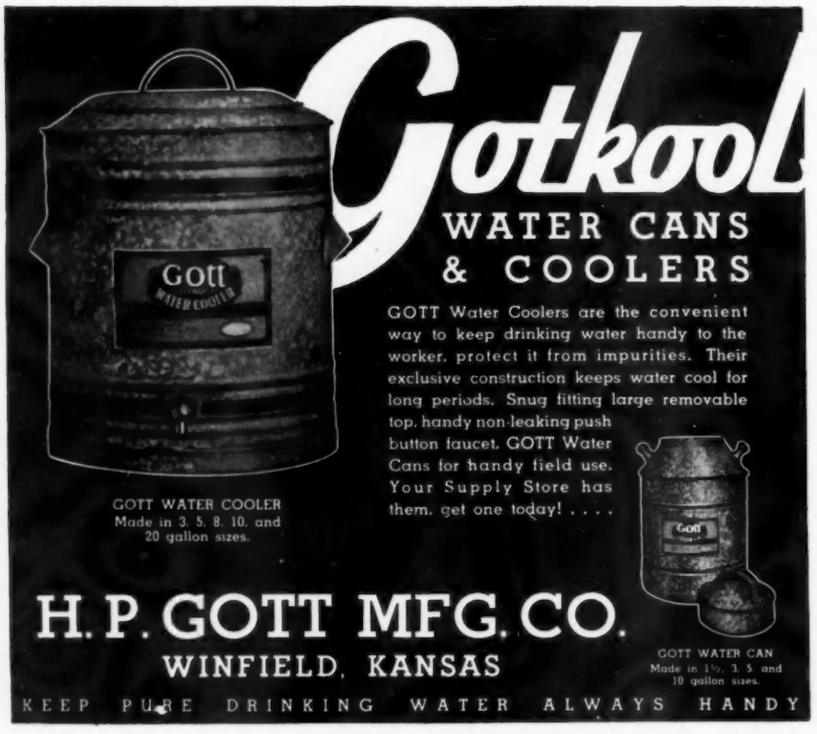
Oil City Brass Works, Beaumont, Texas, has announced the appointment of Paul Edkin as sales representative in Oklahoma and Kansas. He will maintain an office at 310 Thompson Building, Tulsa, having been a resident of that city since 1925 during which time he has been engaged in the sale of oil-well supplies.

Paul Edkin

Miers Named Houston Manager For Southwest Supply Company

Shep Miers, for the past 14 years sales representative for Kerotest Manufacturing Company in various Mid-Continent oil centers, is now Houston division sales manager for Southwest Supply Company, and has moved from Tulsa to Houston. His territory covers Texas, Arkansas, Louisiana, Mississippi and New Mexico. The company's Houston office has been moved from the Gulf Building to the Commerce Building.

Shep Miers


Gotkool
WATER CANS
& COOLERS
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
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WATER COOLER
GOTT WATER COOLER
Made in 3, 5, 8, 10, and 20 gallon sizes.
GOTT WATER CAN
Made in 1½, 3, 5 and 10 gallon sizes.
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

Packers

Lane-Wells Company, Los Angeles, has issued a new bulletin on packers, liner hangers and bridging plugs. Descriptions are given of the application of packers as developed by oil company engineers in conjunction with the Lane-Wells Company engineering staff. Complete tables of sizes, weights, parts, are given, as well as diagrams to show the operation of the different types of packers.

Featured is the new quinta-seal circulation-type packer with five flat sidewall rings of neoprene to provide bearing surface for a positive fluid seal and resistance to pressures. Maximum area of the heat-treated alloy steel slips are designed to give a positive grip without cutting. The body of seamless steel casing, or tubing, has the same inside diameter as the string on which the packer is run. A large circulation area between the packing assembly and the tubing is provided to permit it to be set and reset as often as required, without swabbing action, even in heavy rotary mud.

Steel

American Steel & Wire Company, Cleveland, subsidiary of United States Steel Corporation, has issued a 52-page bulletin on "USS Stainless and Heat-Resisting Steels for the Petroleum Industry." It discusses a wide range of hot and cold end applications of various types of stainless and heat-resisting steels in the petroleum industry, and summarizes laboratory and field experience. A special section is devoted to a discussion of technical and application problems involved in field lining pressure vessels with stainless steel sheets and strip. Detailed technical data in tabular form is included for 9 different types of flat-rolled stainless and heat-resisting steels and for 15 different types of stainless and heat resisting tubular products, together with a summary of corrosion-resistance data for 4 types of stainless steels exposed to various reagents in a series of laboratory tests.

Rubber

The B. F. Goodrich Company, Akron, Ohio, has issued a 30-page booklet on "Typical Examples of Goodrich Development in Rubber," being reprints of a series of recent advertisements of the company on unusual rubber uses.

Regulators

Fisher Governor Company, Marshalltown, Iowa, has issued Bulletin 703, an 8-page leaflet on its Series 730 low-pressure gas service regulators. Units described include the new Type 733A with built-in relief valve designed for close regulation and large capacities. Complete specifications, capacities, dimensions and prices applying to all types are given.

Induction Motors

General Electric Company, Schenectady, New York, has issued three bulletins on its induction motors and single-phase vertical motors. GEA-1412B describes vertical solid-shaft induction motors; GEA-1368D describes vertical hollow-shaft induction motors, and GEA-3223 describes single-phase vertical motors.

Squeaks from the Bull Wheel

Perhaps

A man was suspected by his wife of receiving telephone calls from other women. One night the following conversation could be heard:

"Hello, George."

"Is that you, George?"

"You are, George?"

"Yes, I would, George."

"Certainly I will, George."

"No, George; all right, George."

"Of course I will, George."

"Well, good-bye, George."

Then the man turned to his suspicious wife and said:

"That was George, dear."

Original

Did you get your husband a surprise on his birthday?

I'll say I did. You never saw a more surprised man in your life.

What did you get for him?

Breakfast.

Not Forgotten

A lot of prominent citizens of Tulsa want me to come back and live there.

Really?

Yes, I get letters from the leading merchants ever so often saying that they would like to have me come back and settle.

Quick Start

"Ten years ago I arrived in the town with only one quarter, but that quarter began my fortune at once."

"You must have invested it very profitably."

"I did. I telegraphed home for money."

Different Now

My father is a self-made man. Why, he went in the store as an office boy at $12 per month, and in less than eight years he owned the store.

I couldn't do that in the store I'm working in now.

How's that?

Oh, we have cash registers.

High Finance

"Which is the most valuable, a five-dollar bill or a five-dollar gold piece?"

"Why, the five-dollar bill, of course. Because when you put it in your pocket you can double it."

"Right truly, and when you take it out you will find it in creases."

Double Cross

Hicks—We had a great time at the club last night. Sorry not to see you there, Charley.

Mrs. Porter (after Hicks had gone)—Why, Charles, you told me you spent the whole of last evening at the club.

Mr. Porter (with great presence of mind)—So I did, my dear. The reason Hicks didn't see me was because he wasn't there himself. Trying to deceive his wife, probably.

Mrs. Porter—The wretch. And he would try to rob me of the confidence I have in you. I always did see something about that man I didn't like.

Speed

"That ship of ours goes so fast that every once in a while we have to stop and let the propeller cool."

"That's nothing, bud, our destroyers go so fast that we have to stop to pick up wireless messages."

Two Essentials

A trombone player, like a boxer, needs perfect breathing.

And a long reach.

On the Rebound

I don't want my daughter tied to a hopeless idiot all her life.

Of course not, sir. Then I take it I have your consent?

That's What I Thought You Said

"Did you say that any incompetent man could run a hotel?"

"No. I said that any inn experienced man could."

Rough Treatment

"What is the tactful way for a girl's father to let her boy friend know that's it is high time to leave?"

"He may casually pass through the room with a box of breakfast food."

Sorry He Spoke

An artist was about to begin illustrating a story for a magazine.

"I say," he said to his wife, "this story is supposed to have happened in 1934. What were dresses like four years ago?"

His wife threw him a bitter glance. "Like mine!"

A Matter of Size

"I daren't tell my wife lies. She's a medium, you know."

"Neither dare I. Mine's a heavyweight.

No Ally Needed

"Do you say your prayers at night, little boy?"

"Yes, sir."

"And do you always say them in the morning, too?"

"No, sir. I ain't scared in the daytime."

In Form

"A perfectly maddening day at the office—I could smash everything to bits!"

"Good! I want some wood chopped."

Pointers!

"Professor, why are you taking home such a large box of chocolates?"

"To be on the safe side. This morning my wife gave me a loving kiss—that means that it's either her birthday or our wedding anniversary."

Slight Exaggeration

"Why, the sleeves of this coat are a mile too long."

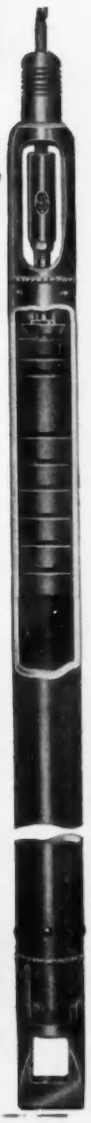
"How much shall I take off, sir?"

"Oh, about half an inch."

CLEAN-OUT Sand and Sediment WITH A MILLER

Sand and sediment in YOUR wells make them poor producers. Clean-Out quickly at small cost — increase production with a MILLER, *The Sand Pump in World-Wide Use!*

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9 inches and lengths of 20, 25 and 30 feet. 5/32-inch wall thickness in REGULAR Type, ¼-inch wall tubes HEAVY DUTY Sand Pumps.



INTERCHANGEABLE BOTTOMS
To Meet Every Condition

● BAILER BOTTOM
With the Bailer Bottom installed the MILLER is quickly changed to a Bailer giving you a combination of either Bailer or a Sand Pump in one tool.

● SAND BOTTOM
Used when tools are run and when well is shot to quickly remove loose material.

● STAR BOTTOM
Used for cutting the sand loose.

● CHISEL BOTTOM
(In Pump)
With this bottom tightly packed sand can be easily broken in small pieces so it can be picked up in the pump.

Write for Descriptive Folder and Price List

See Pages 1672-73 COMPOSITE CATALOG

MILLER Sand Pump Co.

PATENTED NO. 1870540 NO. 1939905 NO. 1787800 NO. 1902628 NO. 1944628 NO. 2050667

General Offices and Factory:

OKLAHOMA CITY, OKLAHOMA
1524 S. E. 29th P.O. Box 4516 Tel. 7-6864

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